INDOOR AIR AND SUB-SLAB VAPOR INTRUSION ASSESSMENT

Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236

October 22, 2021

BCA Project No. 8092/21-253
IDEM State Cleanup #200610047

BCA™ Environmental Consultants

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BCA Environmental Consultants

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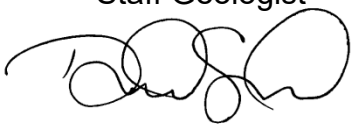
Prepared For:
City of Lawrence
Cooperative Agreement No. BF-00E02707

Respectfully Submitted by:
BCA Environmental Consultants, LLC

Rod A. Manny
Staff Geologist



David W Scovel, LPG
Sr. Geologist, Project Manager

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VP, Technical Services

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List of Abbreviations

BCA	BCA Environmental Consultants, LLC
BGS	Below Ground Surface
CAHs	Chlorinated Aliphatic Hydrocarbons
CVOCs	Chlorinated Volatile Organic Compounds
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
GW	Groundwater
HASP	Health and Safety Plan
HDPE	High Density Polyethylene
IDEM	Indiana Department of Environmental Management
LCS	Laboratory Control Standard
mg/kg	milligrams per kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
PID	Photo-Ionization Detector
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RCG	Remediation Closure Guide
RCG EDCSL	Excavation Direct Contact Screening Level (Soil)
RCG IDCSL	Commercial/Industrial Direct Contact Screening Level (Soil)
RCG MTGW	Migration to Groundwater Screening Level (Soil)
RCG RDCSL	Residential Direct Contact Screening Levels (Soil)
RCG RGSL	Residential Groundwater Screening Level (Groundwater)
RCG VESL	Vapor Exposure Screening Levels (Soil Gas, Indoor Air)
RCG VIGWSL	Vapor Intrusion Groundwater Screening Levels
RCRA	Resource Conservation and Recovery Act
RECs	Recognized Environmental Conditions
RPD	Relative Percent Difference
RoW	Right of Way
SAP	Sampling and Analysis Plan
SLs	Screening Levels
SOP	Standard Operating Procedures
ug/kg	micrograms per kilogram
ug/L	micrograms per Liter
USCS	Unified Soil Classification System
VESLs	Vapor Exposure Screening Levels
VFC	IDEM Virtual File Cabinet
VOCs	Volatile Organic Compounds
WHPA	Well Head Protection Area

1.0 INTRODUCTION

BCA Environmental Consultants, LLC (BCA) was requested by the City of Lawrence, Indiana to perform a Limited Phase II Environmental Site Assessment (ESA) of Meyer Plastics located at 5968 Sunnyside Road, in Lawrence, Indiana (Subject Site). This report is prepared for the City of Lawrence and is funded through a U.S. EPA Brownfield Assessment Grant to the City of Lawrence (Cooperative Agreement No. BF-00E02707). The following report presents the information obtained during the investigation and provides conclusions and recommendations based on the information.

The Subject Site consists of one (1) parcel totaling approximately 9.5 acres in size situated in the City of Lawrence, Indiana (Figure 1). The surrounding area is mixed use industrial, railroad, and commercial properties. The Subject Site is located on the west side of Sunnyside Road and north of E. 59th Street. The Subject Site is owned by Jim Meyer Realty LLC and currently utilized as a fabrication and distributing facility for plastic products.

The Subject Site is part of the former Precision Machine site which was subject to an investigation and remediation of chlorinated solvents. Trichloroethylene (TCE) is known to remain in soil and groundwater beneath the site. The building was constructed with vapor barrier and protection system, which was not active at the time of the sampling. Two previous rounds of vapor intrusion sampling were conducted in 2019 and 2020 (SM&A 2020). TCE was detected in the indoor air, including one sample over the RCG commercial vapor exposure screening level (VESL) in 2019, but none in 2020. Although TCE was detected in the sub-slab soil gas (SGss) in both rounds, none exceeded the IDEM RCG SGss SL.

The purpose of the Indoor Air and Sub-Slab Vapor Intrusion Assessment is to implement the requirements of the IDEM's State Cleanup Section and to further investigate the potential vapor intrusion.

2.0 METHODOLOGY

The investigation procedures followed BCA's City of Lawrence Quality Assurance Project Plan and Field Standard Operating Procedures (QAPP and Field SOP) and those recommended by the IDEM 2012 Remediation Closure Guide (RCG), regulations and industry-accepted practices. Investigation results are compared to RCG Commercial Indoor Air (IA) and Sub-Slab Soil Gas (SGss) Screening Levels from the RCG Appendix A, Table A-6: Screening Level Summary Table updated 2021.

2.1 Sampling and Analysis Plan and Health and Safety Plan

A site-specific SAP and HASP were prepared for the Subject Site prior to sampling activities and were approved by the EPA Region V Brownfield Program. Unless otherwise noted, the plan and procedures followed the SAP. A copy of the approved SAP and HASP is provided in Appendix A.

2.2 Indoor Air Sampling

On August 30-31, 2021, BCA conducted a round of IA and SGss sampling at the Subject Site. The investigation consisted of indoor air samples IA-1, IA-2, IA-3, IA-4, IA-5, and IA-6 with each sampling location paired with a corresponding sub-slab sample point (e.g. IA-1 and SS-1).

SGss sampling followed the IDEM RCG procedures for SGss as found in section 5.7 of the RCG. IA sampling followed the IDEM RCG procedures for IA Sampling as found in section 5.9 of the RCG. The IA samples were collected using laboratory prepared 6 Liter Summa canisters with 24-hour control valves. The SGss samples were collected using 1 Liter canisters with 5-minute flow control valves. The sample canisters were prepared and provided by PACE Laboratories of Minneapolis, Minnesota and were certified clean. All VI samples were analyzed for VOCs by EPA method TO-15 Low Level and compared to the appropriate IDEM RCG Vapor Exposure SLs.

The sample train for the SGss sample consisted of brass vapor sampling points (Vapor Pins®) with silicone seals and Teflon tubing with polycarbonate Luerlock® valves and fittings arranged in a "T" configuration to allow the train to be purged from one leg. Prior to sampling, the sample train was purged utilizing a MiniRAE 3000™ (with a flow rate of 550 mL/min) for 3 minutes prior to sampling. Responses on the PID were recorded in the logbook and on the attached IA sample log sheet. The PID was zeroed outside the facility.

The SGss sample train was leak tested by applying 15-20" of vacuum to the sample train assembly (minus Summa canister). The vacuum is achieved by means of a hand pump with analogue pressure/vacuum gauge. If the assembly held the vacuum for 90 seconds or longer, it was considered leak free and used for the sample. When a drop in vacuum

was observed, the fittings were adjusted or replaced accordingly, and the assembly retested.

Weather data from a local weather station covering the Lawrence area was recorded for a minimum of three days leading up to and during the sampling event. The compiled weather data is presented in Appendix B with the Indoor Air Building Survey Checklist.

The IA sampling log sheet is included as Appendix C.

3.0 Results

Vapor intrusion and sub-slab samples were collected using the sampling procedure described above in Section 2.2 and analyzed for chemicals of concern (CoCs), specifically the chlorinated VOCs: tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride (VC) by EPA Method TO-15 Low Level (TO-15 SIM). The analytical laboratory reports and chain-of-custody forms are presented in Appendix D. The air analytical results are summarized in Section 3.3 – 3.4 below and in Table 1 and on Figure 3.

3.1 Physical Setting/Subsurface Conditions

As estimated from the U.S. Geologic Survey Indianapolis East 7.5-minute Quadrangle Map (1962; C.I. = 5 feet), the elevation of the site is approximately 845 feet above mean sea level (ft MSL). The Subject Site is situated on relatively level terrain. Surface drainage on the Subject Site is likely to the west towards Osborn Ditch but is also likely influenced by storm drains in the City Right-of-Way.

3.1.1 Soils

The soil under the Subject Site is mapped as belonging to five (5) soil types:

Crosby silt loam, fine-loamy subsoil-Urban land complex (YclA), with 0 to 2 percent slopes, covering 59.7% of the Subject Site. Crosby silt loams consist of somewhat poorly drained, relatively flat soils situated on water-lain moraines, ground moraines, or recessional moraines, formed from silty material or loess over loamy till.

Miami silt loam, Urban land complex (YmsB2), with 2 to 6 percent slopes, covering 15.2% of the Subject Site. Miami silt loams consist of moderately well drained, relatively flat soils situated on till plains, formed from loess over loamy till.

Urban land-Brookston complex (UbaA), with 0 to 2 percent slopes, covering 12% of the Subject Site. Brookston complex soils consist of poorly drained, relatively flat soils situated on depressions on till plains, formed from loess over loamy till.

Crosby-Urban land-Miami silt loams complex (UbaA), with 2 to 4 percent slopes, covering 9.5% of the Subject Site. Crosby silt loams consist of somewhat poorly drained, relatively flat soils situated on water-lain moraines, ground moraines, or recessional moraines, formed from silty material or loess over loamy till.

Urban land-Crosby silt loam complex, fine-loamy subsoil (UcfA), with 0 to 2 percent slopes, covering 3.7% of the Subject Site. Crosby silt loams consist of somewhat poorly drained, relatively flat soils situated on water-lain moraines, ground moraines, or recessional moraines, formed from silty material or loess over loamy till (Web Soil Survey-Appendix E).

3.1.2 Surficial Geology

The area of the Subject Site is located within the physiographic province known as the Tipton Till Plain. The Tipton Till Plain is of low relief and is composed of thick glacial deposits that obscure the underlying bedrock topography (Fenelon, et al, 1994).

The unconsolidated sediments are predominantly till of northeastern source (Huron & Erie Lobe). These Wisconsinan age glacial outwash deposits are comprised of loam till, of the Trafalgar Formation (Gray, 1989). Up to 200-feet of unconsolidated sediments overlie the bedrock in the area (Fenelon, et al, 1994).

3.1.3 Bedrock Geology

The bedrock geology of the area is recognized as Devonian Age limestone and dolomite of the Muscatatuck Group (Gray, 1987).

3.1.4 Hydrology

The Subject Site is located within the hydrogeologic province of the White River Basin (Fenelon, et al, 1994). The main tributary of the area is the White River. There are minor tributaries associated with the basin. More specifically, as located within Lawrence, is Fall Creek, which discharges into the White River, nine (9) miles southwest of Lawrence. Two (2) aquifers have been identified in the area around Lawrence: buried sand and gravel aquifer; and a carbonate bedrock aquifer (Fenelon, et al, 1994). The City of Lawrence is served by a public water supply. Static water level in the area is approximately 10-feet bgs.

3.2 Laboratory Analysis of Samples

Laboratory analysis for CoCs in the air samples were conducted by PACE Analytical Laboratories of Minneapolis, Minnesota. Analytical laboratory reports and chain-of-custody documents are included in Appendix D.

Not counting QA/QC samples, a total of twelve (12) air samples were collected: six (6) indoor and six (6) sub-slab soil gas samples were analyzed for the CoCs by EPA Method TO-15 Low Level.

QA/QC samples included both field and laboratory samples. A trip blank, duplicate sample, and upwind/downwind samples were collected and analyzed for the CoCs. Laboratory QA/QC included method blanks, LCS, and laboratory duplicates.

3.3 Vapor Intrusion and Sub-Slab Results

Vapor intrusion and sub-slab samples were collected using the sampling procedure described above in Section 2.2 and analyzed for the CoCs. The air analytical results are summarized in Table 1 and on Figure 3.

While low levels of TCE were detected in three of the SGss samples, all SGss samples were below the applicable VESLs.

IA samples were below the RCG Commercial VESLs except for the following:

- TCE was detected above the RCG Commercial/Industrial VESL (8.8 ug/m3) at:
  IA-6 – 16.9 ug/m3 (Production Space – SE Corner of Building)

Data Assessment:

Field QA/QC samples collected during the VI sampling included a field duplicate, ambient air (up-wind/down-wind) samples, and a trip blank.

For all CoCs both the sample and duplicate were below the detection limit, equating to zero percent (0%) relative percent difference (RPD). No CoCs were detected in the Upwind or Downwind samples. However, TCE was detected in the Trip Blank at 3.5 ug/m3. The trip blank canister is nitrogen filled, handled, and sealed at the lab with the other canisters, but is not opened during the sampling event. It monitors exposure during handling and travel. Due to the presence of TCE in the trip blank, all sample detections up to five times (5x) the trip blank detection (or up to 17.5 ug/m3) should be considered estimated and could overestimate the concentration.

Laboratory QA/QC samples (method blanks, LCS and lab duplicates) were all within control limits. A Level IV QA/QC data package is included with the lab report in Appendix D.

4.0 DISCUSSION and CONCLUSIONS

Indoor air and sub-slab soil gas sampling for this Vapor Intrusion Assessment were conducted on August 30th and 31st of 2021 at the Subject Site. The investigation included six (6) paired IA and SGss sampling locations.

Laboratory analyses of the submitted samples indicate the presence of CoCs in the sub-slab soil vapors and in the indoor air of the occupied space at the Subject Site. No analytes were found above IDEM RCG Commercial SLs except those discussed below.

Indoor Air:

TCE exceeded the RCG Commercial VESL (8.8 ug/m^3) in the sample from:
IA-6 (16.9 ug/m^3)

No sub-slab samples exhibited concentrations above the VESLs with an attenuation factor of 0.03, which is a commonly accepted attenuation factor for sub-slab samples.

TCE was detected at trace levels in some SGss samples but far below levels that could contribute significantly to the detection at IA-6. The TCE in IA-6 is most likely from indoor sources. The elevated concentration of TCE in the indoor air sample from the production space in the SE corner of the building (IA-6) is most likely attributed to the chemicals and paints involved in the manufacturing process conducted on the premises.

Due to the detection of TCE in the trip blank, all results are considered estimated and may overstate actual concentrations.

Conclusions:
Based on the discussion above, BCA draws the following conclusions:

TCE was detected above the commercial VESL in one (1) indoor air sample. The source of TCE is most likely from indoor sources.

5.0 RECOMMENDATIONS

Based on the results of this Vapor Intrusion Assessment conducted at the Subject Site located at 5968 Sunnyside Road in Lawrence, Indiana, BCA recommends:

- No further investigation.

6.0 REFERENCES

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Gray, Henry H., et al, *Bedrock Geologic Map of Indiana*, Indiana Geological Survey, Indiana Department of Natural Resources, Bloomington, Indiana, Map, 1987.

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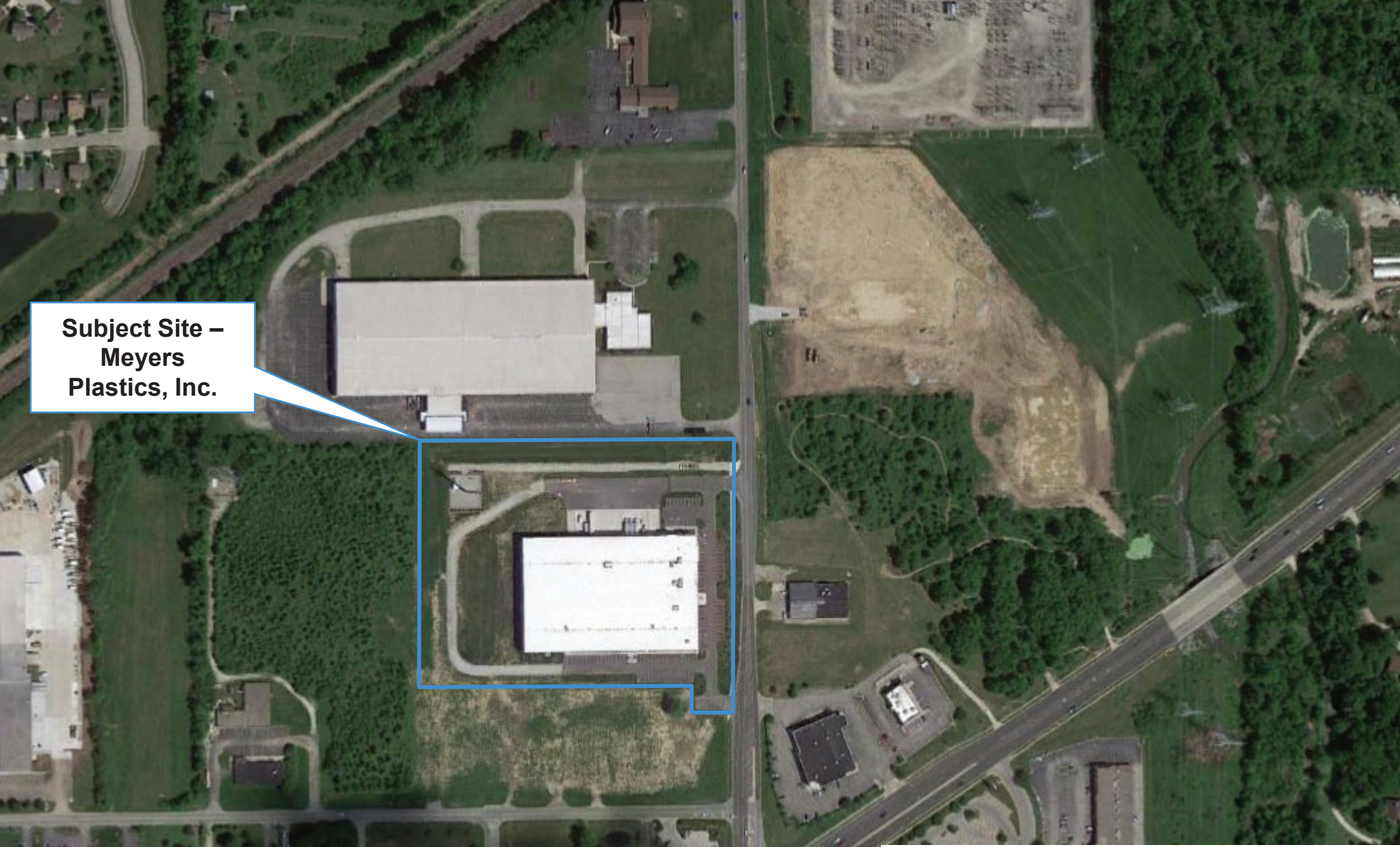
Figures

Indoor Air and Sub-Slab Vapor Intrusion Assessment
Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236



BCA Environmental Consultants, LLC
7202 E 87th Street, Suite 110
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317-578-4233

APPROXIMATE SCALE: NTS

DRAWN BY: RM

DATE: 10/12/2021

BCA PROJECT NO. 21-253

DRAWING TITLE

2021 Aerial Photograph

PROJECT LOCATION:
Meyers Plastics
5968 Sunnyside Road
Lawrence, Indiana, 46226

FIGURE 1

Incrediplex

Legend

- Property Boundary (GIS Based)
- IA & Sub-Slab Soil Gas Sample Point

Tower

5968 Sunnyside Rd. Lawrence, IN

Downwind

IA-1 & SS-1

SS-4

IA-3 & SS-3

IA-4

SS-5 IA-5

IA-2 & SS-2

IA-6 &SS-6

Upwind

Sunnyside Road

Vacant Lot

Commercial
(5979 Sunnyside Rd)

Vacant Lot

Empro Manufacturing Co.
10920 E. 59th

Tree/Shrubs/Brush/Grass

Empro

Empro

Walgreens
(11020 Pendleton Pike)

Sunnyside Road

0 45' 90' 180' 270'

BCA Environmental Consultants
7202 E. 87th St., Suite 110
Indianapolis, IN 46256
317-578-4233

DATE: 10/5/2021

SCALE: 1" = 90'

DRAWING TITLE
Site Map
Sampling Locations

PROJECT LOCATION:
Meyer Plastics
5968 Sunnyside Rd.
Lawrence, Indiana 46236

DRAWN BY: R.M

BCA SITE NO. 8092

FIGURE 2

Legend

- Property Boundary (GIS Based)
- IA-1 Sample Point
- Exceeds RCG VESL - Residential
- Exceeds RCG VESL - Commercial
- Exceeds RCG SGss/SGe - Shallow - Commercial

RSL = Residential Screening Level
VESL = Vapor Exposure Screening Level
BDL = Below Detection Limits
All air results reported in micrograms per cubic meter (ug/m^3)

Empro Manufacturing Co.
10920 E. 59th
Tree/Shrubs/Brush/Grass

Incrediplex

Sunnyside Road

Vacant Lot

Commercial
(5979 Sunnyside Rd)

Tower

5968 Sunnyside Rd. Lawrence, IN

Downwind

DOWNWIND	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

SS-1	8/30/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-1	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-1 DUP	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-1 & SS-1

SS-3	8/30/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-3	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-3 & SS-3

SS-4

SS-4	8/30/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-4	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	4.6
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-4

SS-5	8/30/2021
Tetrachloroethene	BDL
Trichloroethene	2.5
Vinyl Chloride	BDL
All Other VOCs	BDL

SS-5 IA-5

IA-5	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	7.6
Vinyl Chloride	BDL
All Other VOCs	BDL

SS-2	8/30/2021
Tetrachloroethene	BDL
Trichloroethene	3.1
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-2 & SS-2

IA-2	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-6	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	16.9
Vinyl Chloride	BDL
All Other VOCs	BDL

IA-6 SS-6

SS-6	8/30/2021
Tetrachloroethene	BDL
Trichloroethene	18.3
Vinyl Chloride	BDL
All Other VOCs	BDL

Upwind

UPWIND	8/31/2021
Tetrachloroethene	BDL
Trichloroethene	BDL
Vinyl Chloride	BDL
All Other VOCs	BDL

Empro

Empro

0 45' 90' 180' 270'

Vacant Lot

Walgreens
(11020 Pendleton Pike)

BCA Environmental Consultants
7202 E. 87th St., Suite 110
Indianapolis, IN 46256
317-578-4233

DATE: 10/5/2021
SCALE: 1" = 90'

DRAWING TITLE
Site Map
Analytical Results - VOCs

PROJECT LOCATION:
Meyer Plastics
5968 Sunnyside Rd.
Lawrence, Indiana 46236

DRAWN BY: R.M
BCA SITE NO. 8092

FIGURE 3

Tables

Indoor Air and Sub-Slab Vapor Intrusion Assessment
Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236

Table 1
Meyer Plastics
Indoor Air and Sub-Slab Soil Gas
VOCs
Analytical Results

Project ID	Sample ID	Sample Location	Collected Date	Matrix	Units	Tetrachloroethene	Trichloroethene	Vinyl chloride	Other VOCs
					CAS Number	127-18-4	79-01-6	75-01-4	Varies
RCG Residential Vapor Exposure Screening Leve[1]					ug/m3	**42**	**2.1**	**1.7**	**Varies**
RCG Commercial/Industrial Vapor Exposure Screening Leve[1]					ug/m3	**180**	**8.8**	**28**	**Varies**
	Indoor Air Samples								
21-253 Lawrence	IA-1		08/31/2021 09:04	Air	ug/m3	<0.96	<0.76	<0.36	NA
21-253 Lawrence	IA-1 DUP		08/31/2021 09:04	Air	ug/m3	<1.1	<0.88	<0.42	NA
21-253 Lawrence	IA-2		08/31/2021 09:09	Air	ug/m3	<1.1	<0.88	<0.42	NA
21-253 Lawrence	IA-3		08/31/2021 09:02	Air	ug/m3	<0.92	<0.73	<0.35	NA
21-253 Lawrence	IA-4		08/31/2021 10:05	Air	ug/m3	<2.0	**4.6**	<0.75	NA
21-253 Lawrence	IA-5		08/31/2021 09:11	Air	ug/m3	<1.1	**7.6**	<0.41	NA
21-253 Lawrence	IA-6		08/31/2021 10:07	Air	ug/m3	<1.3	**16.9**	<0.48	NA
21-253 Lawrence	UPWIND		08/31/2021 09:24	Air	ug/m3	<1.1	<0.85	<0.40	NA
21-253 Lawrence	DOWNWIND		08/31/2021 09:28	Air	ug/m3	<1.1	<0.85	<0.40	NA
21-253 Lawrence	Trip Blank		08/31/2021 00:00	Air	ug/m3	<0.69	**3.5**	<0.26	NA
RCG Commercial/Industrial Sub-Slab Soil Gas Screening Leve[4]					ug/m3	**6000**	**293**	**933**	**Varies**
	Paired Sub-Slab Samples								
21-253 Lawrence	SS-1		08/30/2021 11:54	Air	ug/m3	<1.4	<1.1	<0.55	NA
21-253 Lawrence	SS-2		08/30/2021 11:42	Air	ug/m3	<1.4	**3.1**	<0.55	NA
21-253 Lawrence	SS-3		08/30/2021 12:17	Air	ug/m3	<1.2	<0.95	<0.45	NA
21-253 Lawrence	SS-4		08/30/2021 11:00	Air	ug/m3	<1.3	<1.1	<0.50	NA
21-253 Lawrence	SS-5		08/30/2021 11:27	Air	ug/m3	<1.4	**2.5**	<0.55	NA
21-253 Lawrence	SS-6		08/30/2021 11:14	Air	ug/m3	<1.4	**18.3**	<0.55	NA
	Field Duplicate RPD (IA-1 & IA-1 DUP)[6]				%	0.0%	0.0%	0.0%	0.0%

VOCs = Volatile Organic Compounds

BDL = Below Detection Limits

1. IDEM Indoor Air Action Levels (ug/m3) taken from IDEM Remediation Closure Guide Table A - 2021
2. Residential Shallow Soil Gas Screening Level = 0.1 attenuation factor of the RCG RVESLs
3. Commercial Shallow Soil Gas Screening Level = 0.01 attenuation factor of the RCG IVESLs
4. Sub-slab Soil Gas (SGss) Screening Level = 0.03 attenuation factor of the RCG RVESLs - IDEM RCG September 29, 2020
5. Sewer gas and sewer vent stack Screening Level = 0.03 attenuation factor of the RCG RVESLs - IDEM RCG-2
6. RPD = relative percent difference = ABS((X-Y)/((X+Y)/2)) --- if both values are below Reporting Limit, then the RPD is considered 0%

Appendix A

Sampling and Analysis Plan & Health and Safety Plan

Indoor Air and Sub-Slab Vapor Intrusion Assessment
Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236

BCA™ Environmental Consultants

SAMPLING AND ANALYSIS PLAN
INDOOR AIR AND SUB-SLAB VAPOR INTRUSION ASSESSMENT

Former Precision Machine Site
(Meyers Plastic Facility)
10930 E 59th Street
Lawrence, Indiana 46236
August 13, 2021
Cooperative Agreement BF-00E02707

1.0 BACKGROUND AND PURPOSE

The Former Precision Machine site is located at 10930 E 59th Street, Lawrence, Indiana (Subject Site) and consisted of two (2) parcels totaling approximately 14.1 acres in size (Figure 1). The Subject Site is currently owned/occupied by Meyer Plastics, Inc. as a manufacturing facility with a new address of 5968 Sunnyside Road. Files found in the IDEM VFC indicate the Subject Site operated from approximately 1967 through 2000 as a manufacturing facility (including Precision Machine) specializing in metal blasting, plating, and painting. The main building on the Subject Site was 108,000 ft^2 in size and was demolished in 2007. The Subject Site is located on the northwest corner of 59th Street and Sunnyside Road and is bounded by commercial properties to the north, south, and east. A commercial/industrial property (Empro Marketing) adjoins the Subject Site to the west. Meyer Plastics, Inc. began operation on Parcel 1 of the Subject Site during 2019. Parcel 2 remains vacant in 2021. The area is primarily industrial.

VOCs including TCE and Vinyl Chloride have been found to have impacted subsurface soils and groundwater at the Subject Site. The site has been subject to Voluntary Remediation Program (VRP) and State Cleanup Program (SCP) investigation and remediation activities, including the removal of soil source areas of Chlorinated Solvents and chemical amendments injection for treatment of groundwater.

Quarterly groundwater monitoring was conducted between 2017 and 2019, and indoor air sampling was conducted in July of 2019 and again in February of 2020. A BFPP Comfort Letter was issued for the Subject Site by IDEM on June 22, 2021. The SCP has requested a round of vapor intrusion sampling during summer worst case conditions.

The purpose of the Vapor Intrusion Assessment is to investigate the concentrations of chemicals of concern (CoCs) in the indoor air and sub-slab soil vapors. The project is funded through the U.S. EPA Brownfield Assessment Grant to the City of Lawrence (Cooperative Agreement BF-00E02707).

2.0 SCOPE OF WORK

The investigation procedures will follow BCA's City of Lawrence Quality Assurance Project Plan and Field Standard Operating Procedures (QAPP and Field SOP) and those recommended by the IDEM Remediation Closure Guide (RCG), regulations and industry-accepted practices. Investigation results will be compared to the appropriate RCG screening levels from the RCG Appendix A, Table A-6: Screening Level Summary Table updated 2021.

2.1 Vapor Intrusion Assessment

Paired Indoor Air (IA) and Sub-slab Soil Gas (SGss) samples will be collected from the occupied on-site structure. Samples will include three (3) pairs in the building in the Production Floor Area, two (2) pairs in the Office Space Area, and one (1) pair in the Production Space Area.

All VI samples will be summarized in a single table organized by location and will be summarized on a figure showing sampling locations.

Based on previous investigations, indoor air and sub-slab soil gas samples will be analyzed for the chlorinated volatile organic compounds (c-VOCs) tetrachloroethene, trichloroethene, and vinyl chloride.

2.2 Field Methods

The approved Field Standard Operating Procedures for the project will be used for all tasks. The placement of probes will be as indicated in the attached site map (Figure 2).

SGss sampling will follow the IDEM RCG procedures for SGss as found in section 5.7 of the RCG. IA sampling will follow the IDEM RCG procedures for IA Sampling as found in section 5.9 of the RCG.

SGss and IA samples will be collected using laboratory prepared 6 Liter Summa canisters with 24-hour control valves. All VI samples will be analyzed for CoCs by EPA method TO-15 Low Level (TO-15 SIM) and compared to the appropriate IDEM RCG Vapor Exposure SLs.

The sample train for the SGss samples will consist of brass vapor sampling points (VaporPin®) with silicone seals and Teflon tubing with polycarbonate Luerlock® valves and fittings arranged in a "T" configuration to allow the train to be purged from one leg.

Prior to sampling, the sample train will be purged utilizing a MiniRAE 3000™ (with a flow rate of 550 mL/min) for 1 minute (or a minimum of three sample train volumes) prior to sampling.

SGss sample trains will be leak tested by applying 10-15” of vacuum to the sample train assembly (minus Summa canister). The vacuum is achieved by means of a hand pump with analogue pressure/vacuum gauge. If the assembly holds the vacuum for 90 seconds or longer, it is considered leak free and used for the sample. If a drop in vacuum is observed, fittings are adjusted accordingly, and the assembly will be retested.

2.3 Laboratory Methods

An analysis summary is provided in Table 1. The analytes and methods utilized for this project include:

c-VOCs = EPA Method TO-15 low level (soil gas).

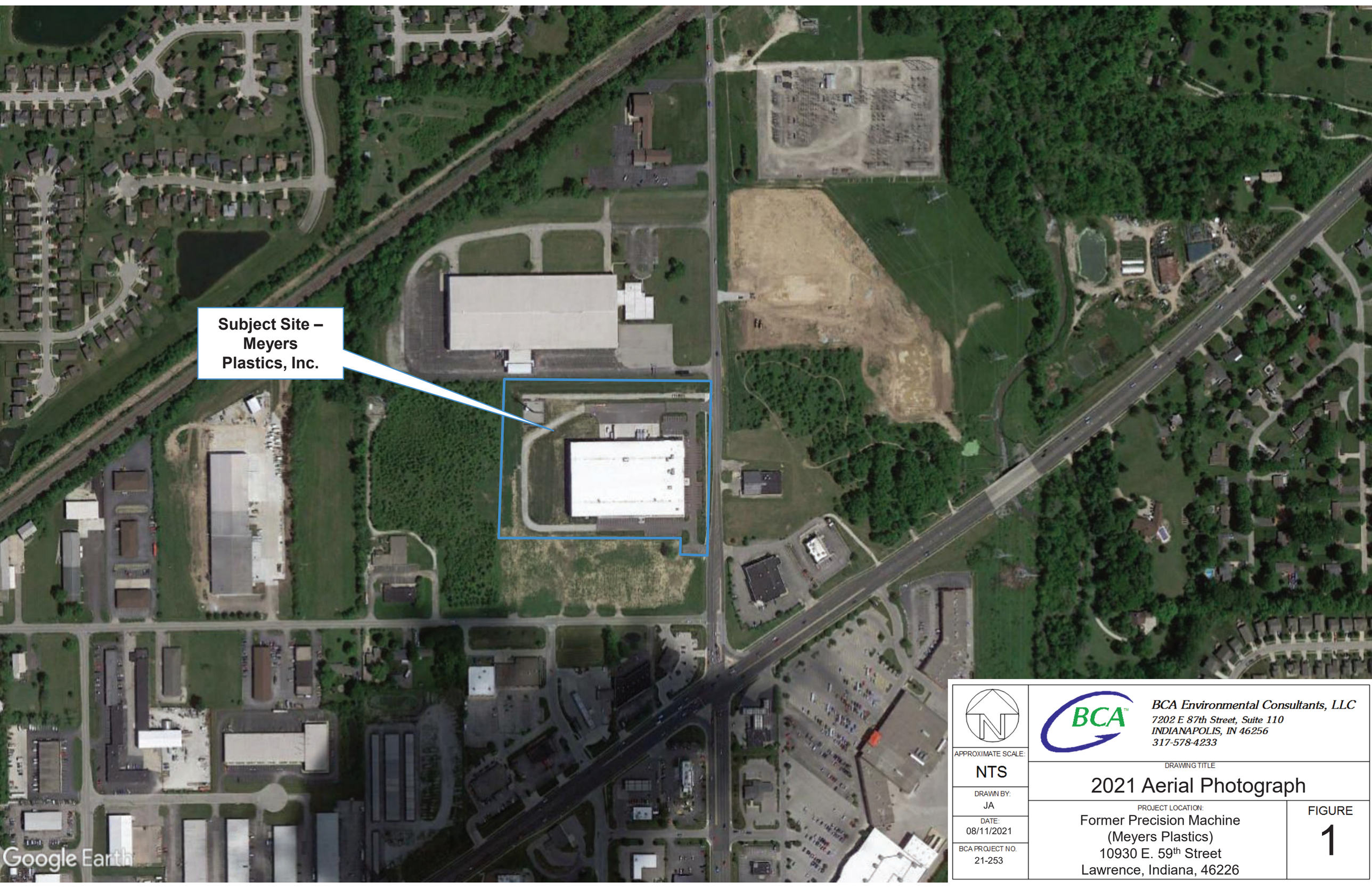
2.4 Quality Control

Field QA/QC samples for the SGss and IA investigation will include a trip blank (laboratory prepared nitrogen filled Summa can), ambient air (upwind – downwind) and one IA Field Duplicate. The laboratory report will include a Full QA/QC data package.

The IA sample log, leak test logs, and Building Checklist will be provided in the Vapor Intrusion Assessment report.

2.5 Report

Observations and data generated by the field investigation will be summarized in a report for submittal to the Client. The report will contain a detailed explanation and documentation of sample locations and collection procedures. The analytical data will be summarized, and conclusions discussed to the extent possible.



APPROXIMATE SCALE:	NTS
DRAWN BY:	JA
DATE:	08/11/2021
BCA PROJECT NO.	21-253

BCA Environmental Consultants, LLC
7202 E 87th Street, Suite 110
INDIANAPOLIS, IN 46256
317-578-4233

DRAWING TITLE

2021 Aerial Photograph

PROJECT LOCATION:
Former Precision Machine
(Meyers Plastics)
10930 E. 59th Street
Lawrence, Indiana, 46226

FIGURE
1

APPROXIMATE SCALE:	NTS
DRAWN BY:	JA
DATE:	08/11/2021
BCA PROJECT NO.	21-253

BCA Environmental Consultants, LLC
7202 E 87th Street, Suite 110
INDIANAPOLIS, IN 46256
317-578-4233

DRAWING TITLE

Sample Locations

PROJECT LOCATION:
Former Precision Machine
(Meyers Plastics)
10930 E. 59th Street
Lawrence, Indiana, 46226

FIGURE
2

TABLE 1
ANALYSIS SUMMARY
Phase II ESA
Former Precision Machine
10930 E 59th Street
Lawrence, IN

Sampling Type	No. of Samples	MS/MSD	Equip. Blank	Trip Blank	Duplicate	Total Samples	Analysis	Containers	Preservatives	Holding Times
Soil	0					0	VOCs 8260	3 pretared 40 ml glass vials w/ approx 5 gms soil in each from terre core sampler. 4th for moisture.	MeOH in 1. DI in 2 - freeze in 48 hrs	14 Days
	0					0	SVOCs/PAHs 8270	4-ounce Glass Jars	Cool to 6°C	14 Days
	0					0	PAHs 8270	4-ounce Glass Jars	Cool to 6°C	14 Days
	0					0	14 Metals 6010/7470	4-ounce Glass Jars	Cool to 6°C	180 Days, Hg 28
	0					0	Chromium VI 7199A	4-ounce Glass Jars	Cool to 6°C	CrVI 30 days
	0					0	Lead 6010	4-ounce Glass Jars	Cool to 6°C	180 Days
	0					0	Arsenic 6010	4-ounce Glass Jars	Cool to 6°C	180 Days
	0					0	4 metals 6010	4-ounce Glass Jars	Cool to 6°C	180 Days
	0					0	Cyanide 9010/9012	4-ounce Glass Jars	Cool to 6°C	14 Days
	0					0	Herbicides 8151	4-ounce Glass Jars	Cool to 6°C	180 Days
	0					0	Pesticides	4-ounce Glass Jars	Cool to 6°C	14 Days
	0					0	PCBs 8082A	4-ounce Glass Jars	Cool to 6°C	14 Days
Follow-up Soil	0					0	VOCs 8260	3 pretared 40 ml glass vials w/ approx 5 gms soil in each from terre core sampler. 4th for moisture.	MeOH in 1. DI in 2 - freeze in 48 hrs	14 Days
	0					0	SVOCs/PAHs 8270	4-ounce Glass Jars	Cool to 6°C	14 Days
	0					0	PAHs 8270	4-ounce Glass Jars	Cool to 6°C	14 Days
	0					0	Chromium VI 7199A	4-ounce Glass Jars	Cool to 6°C	CrVI 30 days
	0					0	Arsenic only 6010	4-ounce Glass Jars	Cool to 6°C	180 Days
	0					0	Lead only 6010	4-ounce Glass Jars	Cool to 6°C	180 Days
	0					0	4 metals 6010	4-ounce Glass Jars	Cool to 6oC	180 Days
Groundwater	0					0	VOCs 8260	3 - 40 ml Vials	HCl, Ice	14 Days
	0					0	SVOCs/PAHs - 8270/SIM	1 - 1 liter Amber Glass Jar	Ice	7 Days
	0					0	PAHs - 8270/SIM	2 - 100 ml Amber Glass Jar	Ice	7 Days
	0					0	14 Metals Unfiltered	1 - 250 ml Plastic	HNO3, Ice	180, Hg 28 days
						0	Lead Unfiltered	1 - 250 ml Plastic	HNO3, Ice	180, Hg 28 days
						0	4 Metals Filtered	1 - 250 ml Plastic	HNO3, Ice	180, Hg 28 days
						0	Lead Filtered	1 - 250 ml Plastic	HNO3, Ice	180, Hg 28 days
						0	Chromium VI 7199	1 - 50 ml Plastic	NH4SO4, Ice	CrVI 28 days
						0	Cyanide 9010/9012	1 - 1 liter Amber Glass Jar	NaOH, Ice	14 Days
	0					0	PFAS 537M			
Indoor Air/Soil Gas	**14**			**1**	**1**	**16**	**VOCs TO-15 Low Level**	**1L or 6L Summa Canister**	**---**	**14 Days**
Asbestos	0					0	ACM by PLM	Sealable Plastic Bags	NA	NA

BCA #21-253 Former Precision Machine, 10930 E 59th Street, Lawrence, IN

	Probe	Indoor Air	Groundwater:								Soils:							
Sample #	Depth	TO-15 VOCs	VOCs	PAHs	Unfiltered 14 Metals	Unfiltered Lead	Filtered 4 Metals	Filtered Lead	Filt CrVI 7199	PFAS	VOCs	PAHs	14 Metals	CrVI 7199	4 metals	Arsenic	Lead	Default Depths
IA- 1		1																
IA- 2		1																
IA- 3		1																
IA- 4		1																
IA- 5		1																
IA- 6		1																
SS- 1		1																
SS- 2		1																
SS- 3		1																
SS- 4		1																
SS- 5		1																
SS- 6		1																
Upwind		1																
Downwind		1																
Deeper soil																		
Additional based on field screening																		
Follow-up based on Analytical results																		
Total Samples		14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
QA/QC		2																
Follow Up Samples											0	0	0	0	0	0	0	
Total lab		16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

QA/QC = Field Duplicate, MS/MSD, Equipment Blank, Trip Blank* (VOCs GW)
PFAS QA/QC = Duplicate, MS/MSD/ Equiment Blank, and Field Blank
IA QA/QC = Duplicate, Trip Blank
*1 Trip Blank per sample shipping container

SITE HEALTH AND SAFETY PLAN

Former Precision Machine (Meyer Plastics), 10930 E. 59th Street, Lawrence, Indiana

1.0 GENERAL PROJECT INFORMATION

Prime Contractor:	**BCA Environmental Consultants, LLC**
Client:	**City of Lawrence**
Subject Site Name:	**Former Precision Machine (Meyer Plastics)**
Site Address:	**10930 E. 59th Street, Lawrence, Indiana**
Principal: **Project Manager:**	**John Kilmer** **David Scovel, L.P.G.**
Date of Plan:	**August 13, 2021**

SITE DESCRIPTION

Type of Facility (describe):	**Industrial**
Active or Closed/Abandoned:	**Active**
Describe surface features (buildings, paved or unpaved, overhead/underground utilities):	**One (1) industrial warehouse/production area with offices, approximately 11,700 sq. ft. Paved parking and loading dock to the south, east, and north.**
List any site access restrictions:	**Authorized Personnel only**
Surrounding neighborhood description:	**Commercial / Industrial**

SITE ACTIVITIES - The site activities covered by this HASP include those checked in the box below:

Site Activity	Soil Borings	Monitoring Well Installation	Soil / Purge Water Disposal	Soil Excavation	Soil Sampling
Assessment					
Investigation					
Remediation					

EMERGENCY PHONE NUMBERS

POSITION	NAME	CONTACT
Safety Officer	**David Scovel, L.P.G.**	**© (317) 605-1398**
Field Technician	**Jake Allgood**	**© (502) 718-1091**
Industrial Services	**To be determined**	**To be determined**
Subcontractors: List all names of subcontractors to be used for site activities	**NA**	
Hospital Name	**Community Hospital North**	
Hospital Address	**7150 Clearvista Parkway**	
Hospital Phone Number	**(317) 621-6262**	
Directions to nearest Hospital	**See attached map**	
Fire and Emergency	**Call 911**	
EPA Hotline:	**1-800- 621-3191**	

2.0 INTRODUCTION/SCOPE OF WORK

This plan provides health and safety guidelines for site investigation and remediation activities conducted by BCA Environmental Consultants, LLC (BCA) to protect on-site personnel, visitors and the public from physical harm and exposure to hazardous materials and/or wastes. The procedures and guidelines contained herein are based on the best available information at the time of the plan's preparation. Specific requirements may be revised if new information is received, or site conditions change. It is the responsibility of the field personnel to evaluate the site work conditions and if in doubt about safety or an operation, request assistance from the Site Safety Officer (SSO). Compliance with this plan is mandatory for all on-site BCA personnel and subcontractors.

Operations at the site may require additional tasks not identified in the preparation of this health and safety plan (HASP). Before performing any task not covered in this HASP a revision must be prepared and approved by the SSO.

2.1 Scope of Work

Scope of work for the investigation at the site includes:

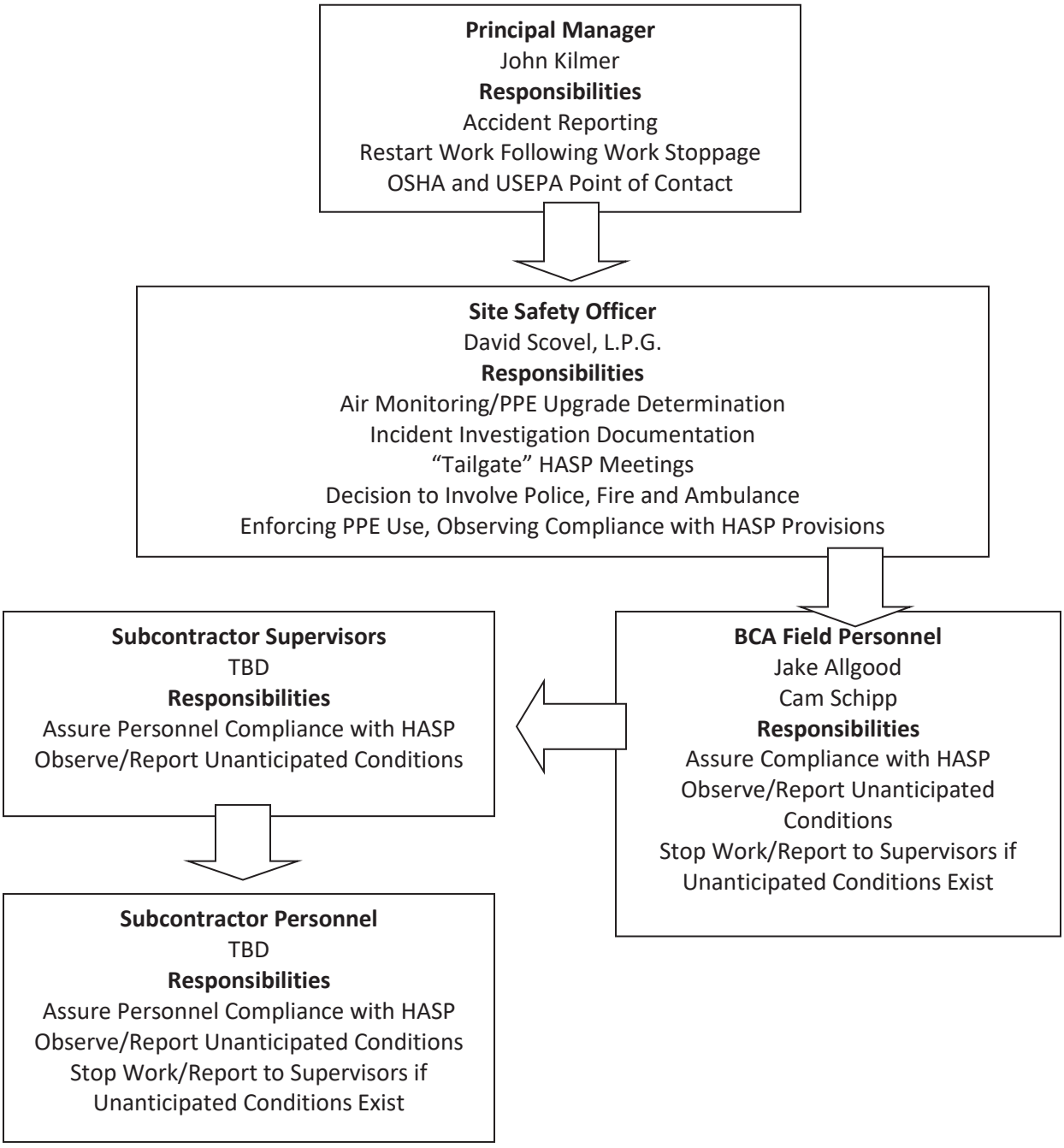
- Indoor Air and Soil Gas

3.0 PERSONNEL CONTACT INFORMATION AND PHONE NUMBERS

The BCA SSO will have the authority to alter work practices, stop work, and/or allocate resources to mitigate unsafe work practices. All personnel have the authority to stop any work practice that may endanger site personnel or the general public. Restarting work will be done in consultation with the SSO. The following personnel and subcontractor resources will be used on this site:

POSITION	NAME	CONTACT
Safety Officer	**David Scovel, L.P.G.**	**© (317) 605-1398**
Field Technician	**Jake Allgood**	**© (502) 718-1091**
Excavation Services	**NA**	**NA**
Industrial Services	**NA**	**NA**
Subcontractors: List all names of subcontractors to be used for site activities	**Na**	**NA**

TABLE OF AUTHORITY



4.0 EMERGENCY INFORMATION/RESPONSE

The purpose of this section is to provide the on-site user with contact and location information to be used in case of an emergency response situation. In case of an emergency on-site, **CALL 911** first and **NOTIFY** the site operator (if available). Then contact the BCA project manager and Site Safety Officer for this site.

EMERGENCY PHONE NUMBERS

Hospital Name	**Community Hospital North**
Hospital Address	**7150 Clearvista Parkway**
Hospital Phone Number	**(317) 621-6262**
Directions to nearest Hospital	See attached map
Fire and Emergency	Call 911
EPA Hotline:	1-800- 621-3191
National Response Center	1-800-424-8802
TSCA HOTLINE	1-800-424-9065
Poison Control Center	1-800-382-9097
CHEMTREC	1-800-424-9300
National Pesticide Center	1-800-858-7378

5.0 STANDARD EMERGENCY PROCEDURES

5.1 Hazard Communication

Any organization wishing to bring any hazardous material onto any BCA-controlled work site must first provide a copy of the item's Safety Data Sheet (SDS) to the Site Safety Officer for approval and filing (the Site Safety Officer will maintain copies of all SDSs on site). SDSs may not be available for locally obtained products, in which case some alternate form of product hazard documentation will be acceptable. All personnel shall be briefed on the hazards of any chemical product they use and shall be aware of and have access to all SDSs. All containers on site shall be properly labeled to indicate their contents. Labeling on any containers not intended for single-day, individual use shall contain additional information indicating potential health and safety hazards (flammability, reactivity, etc.).

The Hazard Communication standard (29 CFR 1910.1200) has been provided to employees, and a written copy is on file at BCA's office.

5.2 Confined Space Entry

There is no expectation that a confined space will be entered during this project.

6.0. PERSONNEL TRAINING RECORDS

All personnel working within the exclusion zone are required to have 40 hour HAZWOPER training and be current with refresher training in accordance with 29CFR 1910.120.

7.0 KNOWN OR ANTICIPATED HAZARDS

7.1 General Safety Rules

Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

Smoking, Eating, or Drinking

Smoking, eating and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any BCA-controlled site.

Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply: A water supply adhering to the following requirements will be utilized:

- An adequate supply of potable water will be available for field personnel consumption.
- Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains. Where drinking fountains are not available, individual-use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources.
- Non-potable water may be used for hand washing and cleaning activities. Non-potable water will not be used for drinking purposes. All containers of non-potable water will be marked with a label stating:

Non-Potable Water
Not Intended for Drinking Water Consumption

Toilet Facilities:

- A minimum of one toilet will be provided for every 20 personnel on site, with separate toilets maintained for each sex except where there are less than 5 total personnel on site. For mobile crews where work activities and locations permit transportation to nearby toilet facilities on-site facilities are not required.

Washing Facilities:

- Employees will be provided washing facilities (e.g., buckets with water and Alconox) at each work location. The use of water and hand soap (or similar substance) will required by all employees following exit from the Exclusion Zone, prior to breaks, and at the end of daily work activities.

Buddy System

All field personnel will use the buddy system when working within any controlled work area. Personnel belonging to another organization on site can serve as "buddies" for BCA personnel. Under no circumstances will any employee be present alone in a controlled work area.

7.2 Heat and Cold Stress

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress.

Heat stress can be a significant field site hazard, particularly for non-acclimated personnel operating in a hot, humid environment. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress.

7.3 Responding to Heat-Related Illness

The guidance below will be used in identifying and treating heat-related illness.

Type of Heat-Related Illness	Description	First Aid
Mild Heat Strain	The mildest form of heat-related illness. Victims exhibit irritability, lethargy, and significant sweating. The victim may complain of headache or nausea. This is the initial stage of overheating, and prompt action at this point may prevent more severe heat-related illness from occurring.	• Provide the victim with a work break during which he/she may relax, remove any excess protective clothing, and drink cool fluids. • If an air-conditioned spot is available, this is an ideal break location. • Once the victim shows improvement, he/she may resume working; however, the work pace should be moderated to prevent recurrence of the symptoms.
Heat Exhaustion	Usually begins with muscular weakness and cramping, dizziness, staggering gait, and nausea. The victim will have pale, clammy moist skin and may perspire profusely. The pulse is weak and fast and the victim may faint unless they lie down. The bowels may move Involuntarily.	• Immediately remove the victim from the work area to a shady or cool area with good air circulation (avoid drafts or sudden chilling). • Remove all protective outerwear. • Call a physician. • Treat the victim for shock. (Make the victim lie down, raise his or her feet 6–12 inches, and keep him or her cool by loosening all clothing).

Heat Stroke	The most serious of heat illness, heat stroke represents the collapse of the body's cooling mechanisms. As a result, body temperature may rise to 104 degrees Fahrenheit or higher. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, nausea can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. Heat stroke can occur suddenly	• Immediately evacuate the victim to a cool and shady area. • Remove all protective outerwear and as much personal clothing as decency permits. • Lay the victim on his or her back with the feet slightly elevated. • Apply cold wet towels or ice bags to the head, armpits, and thighs. • Sponge off the bare skin with cool water or rubbing alcohol, if available. • The main objective is to cool without chilling the victim. • Give no stimulants or hot drinks. • Since heat stroke is a severe medical condition requiring professional medical attention, emergency medical help should be summoned immediately to provide onsite treatment of the victim and proper transport to a medical facility.

8.0 PHYSICAL HAZARDS AND MITIGATION PROCEDURES

Safe work practices in compliance with OSHA standards and this document will be used at all times. The first aid kit and fire extinguisher are to be on site at all times. The following table lists the anticipated hazards and the associated safety rules for proper control.

Hazard Description	Potential Result	Control Measure
Tool Handling	Cuts, contusions, bruises	Wear gloves, steel-toed boots and safety glasses
Vehicle Traffic	Impact, getting struck by vehicle	Set up safety cones around the well that is being sampled. Communicate activities with any onsite personnel. Wear reflective vest. Use truck or van as a shield if possible. Set up snow fence for each location where pedestrian walkways are affected and cover all openings or secure with snow fence during all breaks or overnight.
Heat/Cold	Heat stress/frostbite	Heat: Take frequent breaks and drink plenty of fluids. Watch for signs/symptoms of heat stress (fainting, dizziness, excessive sweating) Cold: Wear several layers of clothing, do not work in excessive cold, and take frequent breaks.
Slip, trip and fall	Bruising, sprained ankle/foot/knee	Be aware of surroundings and practice good housekeeping measures around the site area to minimize items that pose a trip hazard.
Splash	Exposure to contaminants in the groundwater – dermal and/or eye	Wear gloves and safety glasses during purging of well and sample collection.
Hazardous Energy Control	Personal injury, electrocution	Use lockout/tagout controls to ensure that hazardous energy sources (electrical) are controlled prior to valve removal activities, including electrical and water pressure. All underground utilities should be marked prior to intrusive activities. A site walk-through should identify all overhead power lines.
Heavy Equipment	Struck by	Keep aware of the location of heavy equipment at all times. If overhead activities are taking place

		hard hats will be used.
Fire and Explosion	Flammable vapors from petroleum may ignite	Monitor for the presence of flammable vapors with an explosimeter. Fire extinguishers should be available. Evacuate the area immediately, call 911 and evaluate the situation.
Noise/Hearing Protection	Active hand-drilling and other processes may exceed noise exposure standard of 85 decibels	Wear appropriate hearing protection.
Biological Hazards	Poisonous vegetation and/or stinging/biting insects or animals	Keep aware of surroundings and if bite or sting takes place seek first aid and/or medical attention

9.0. CHEMICAL HAZARDS POTENTIALLY ON SITE

9.1 Waste Characterization

Potential hazards for each of the tasks presented below are assessed. As work items are being performed, continued monitoring and observation will be used to determine if conditions change. Site Safety Officer will be responsible for continued assessment, and work practice modification in the event that unsafe work practices are observed. The following site activities are anticipated:

- Soil, soil gas, and groundwater sampling; waste disposal

9.2 Hazard Evaluation

Chemicals of Concern: Identify all chemicals that are present or suspected to be present on site and the maximum concentrations detected in soil or water.

Chemical Name	TLV/PEL (8 hour TWA exposure limit for inhalation exposure in breathing zone)	Maximum Concentration in Soil (mg/kg or ppm)	Maximum Concentration in Water (mg/l or ppm)	Health Hazard/Comments
VOCs	Varies	TBD	TBD	Varies
SVOCs	Varies	TBD	TBD	Varies
PAHs	Varies	TBD	TBD	Varies
PCBs	Varies	TBD	TBD	Varies
Metals	Varies	TBD	TBD	Varies

Is free product onsite?
___ Yes ____ No _X__ Unsure

Will work tasks be performed inside buildings/enclosures?
___ Yes __X__ No

Is there evidence that contaminants present could cause vapor problems in structures?
___ Yes __X__ No ___ Unsure

If Yes, is building mechanically ventilated?
____ Yes ____ No

10.0 BIOLOGICAL HAZARDS AND MITIGATION PROCEDURES

Contact with animals, insects, and plants can cause injury and illness to personnel. Care must be taken to ensure that these types of injuries are avoided. Some examples of biological hazards include:

- Wild animals, such as snakes, raccoons, squirrels, and rats. These animals not only can bite and scratch, but can carry transmittable diseases (e.g., rabies). Avoid the animals whenever possible. If bitten, go to the nearest medical facility.

- Insects such as mosquitoes, ticks, bees, and wasps. Mosquitoes can potentially carry and transmit the West Nile Virus or Eastern Equine Encephalitis (EEE). Ticks can transmit Lyme disease or Rocky Mountain Spotted Fever. Bees and wasps can sting by injecting venom, which causes some individuals to experience anaphylactic shock (an extreme allergic reaction). Whenever you will enter areas that provide a habitat for insects (e.g., grass areas, woods), wear light-colored clothing, long pants and shirt, and spray exposed skin areas with a DEET-containing repellent. Keep away from high grass wherever possible. Keep your eyes and ears open for bee and wasp nests. If bitten by insects, see a doctor if there is any question of an allergic reaction.

- Plants such as poison ivy and poison oak can cause severe rashes on exposed skin. Be careful where you walk, wear long pants, and minimize touching exposed skin with your hands after walking through thickly vegetated areas until after you have thoroughly washed your hands with soap and water.

11.0 ADDITIONAL HAZARDS

The following daily log should be filled out whenever an unexpected hazard is encountered. Include injuries, PPE used, or work stoppages caused by unsafe conditions.

Hazard Observed	Date	Observed by (Print Name)	Mitigation Taken/PPE Used

12.0 LIST OF FIELD ACTIVITIES

The following is a list of filed activities anticipated for this project:

- The main activity will be hand drilling 1-inch holes into the sub-floor for the purpose of sampling sub-slab soil gas. As well as setting summa canisters and allowing them the sit over night to collect indoor air quality samples.

- All contractors will prepare and submit a Health and Safety Plan (HASP) to the project manager before mobilizing to the site. The HASP will be reviewed by the project manager and accepted or rejected. The project manager will not approve the contractors HASP and will only review it to assure that it is at least as stringent as the HASP used by the project manager.

13.0 SITE DESCRIPTION

Type of Facility (describe):	Industrial
Active or Closed/Abandoned:	Active
Describe Surface Features (buildings, paved or unpaved, overhead/underground utilities):	One (1) industrial warehouse/production area with offices, approximately 11,700 sq. ft. Paved parking and loading dock to the south, east, and north.
List Any Site Access Restrictions:	Authorized Personnel Only
Surrounding Neighborhood Description:	Commercial/Industrial/Residential

14.0 PERSONNEL PROTECTIVE GEAR/ENGINEERING CONTROLS

14.1 Personnel Protective Gear

Level D:
Sampling can be performed using modified Level D protection. The following items are needed for modified Level D.

- Hard hat (for overhead hazard activities)
- Steel-toe work boots
- Coveralls and/or long pants with short sleeved shirts (at a minimum)
- Eye protection when a splash hazard exists
- Hearing protection during active drilling or other loud operations
- Nitrile gloves for sampling and/or contact with soil and groundwater.

Modifications:
Modifications to this level of protection will be made if site conditions and/or contamination levels warrant an upgrade in protection level.

Level C:
If site conditions warrant, an upgrade to level C will be made if air monitoring equipment indicates respiratory protection is required. Air-purifying respirators with organic vapor cartridges will be used in this situation. The SDS for that substance shall be consulted to determine the appropriate personal protective equipment (i.e. chemical resistant coveralls/gloves, chemical goggles, respiratory protection).

Surveillance Equipment and Materials:
Photoionization Detector

Work Limitations (Time of Day, etc.):
All sampling operations will be conducted during daylight hours. No smoking or eating during soil handling procedures.

14.1.1 PPE Donning and Doffing Information

The following information is to provide field personnel with helpful hints that, when applied, make donning and doffing of PPE a more safe and manageable task:

- Never cut disposable booties from your feet with basic utility knives. This has resulted in workers cutting through the booty and the underlying sturdy leather work boot, resulting in significant cuts to the legs/ankles. Recommend using a pair of scissors or a package/letter opener (cut above and parallel with the work boot) to start a cut in the edge of the booty, then proceed by manually tearing the material down to the sole of the booty for easy removal.

- When applying duct tape to PPE interfaces (wrist, lower leg, around respirator, etc.) and zippers, leave approximately one inch at the end of the tape to fold over onto itself. This will make it much easier to remove the tape by providing a small handle to grab while still wearing gloves. Without this fold, trying to pull up the tape end with multiple gloves on may be difficult and result in premature tearing of the PPE.

- Have a "buddy" check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation.

- Never perform personal decontamination with a pressure washer.

14.2 Medical Surveillance Requirements

All personnel must have completed the appropriate medical monitoring requirements as specified in 29 CFR 1910.120. Documentation of medical monitoring is the responsibility of each employer.

14.3 Engineering Control

The engineering control to prevent pedestrian/general population from exposure to hazards at the work site is Site Control.

14.3.1 Site Control Measures

Site controls establish the hazardous area perimeter and prevent access or exposure by unauthorized personnel or the public. The site map is attached to the Field Instructions and is incorporated as part of the HASP. The "buddy system" is to be used throughout those site operations that require it.

Site Entry Procedures: Notify property owner before mobilizing to the site.

An exclusion zone, contamination reduction zone and support zone will be identified for each site activity.

14.3.2 Emergency First Aid Procedures

If eye irritation, nausea, vomiting, dizziness, unusual odors or any other unusual mental or physical sensations are noticed, seek medical assistance.

Inhalation: Move person to fresh air, seek medical assistance.
Ingestion: Do not induce vomiting, seek medical attention.
Eyes: Flush with copious amounts of water.
Skin: Wash with soap and water.

15.0 AIR MONITORING REQUIREMENTS

Where VOC's are present, all soil samples will be field screened for volatile organics using a photoionization detector (PID). During soil sample collection, it is expected that headspace gasses will be below the action level. However, during the course of soil sampling, if headspace gasses exceed 100 ppm, breathing zone monitoring will be conducted. If volatile gasses are detected in the breathing zone, the work activities work will stop and breathing zone gasses will be monitored using the FID or one of the other detectors outlined below. Further work may be conducted after elimination of all ignition sources, increasing the monitoring frequency, or elevate the level of PPE.

Instrumentation Available for Higher Level Air Monitoring:

INSTRUMENT	MANUFACTURER/MODEL*	SUBSTANCES DETECTED
Photo Ionization Detector (PID)	**RAE Systems mini-RAE (10.6 eV Lamp)**	**Petroleum Hydrocarbons Organic Solvents**
Flame Ionization Detector (FID)	**NA**	**Petroleum Hydrocarbons Organic Solvents**
Combustible Gas Indicator (CGI) May Be Combined with Individual or Multi-gas Detectors.	**NA**	**Explosivity**
Individual Gas Detectors	**NA**	**Oxygen (O_2)** **Carbon Monoxide (CO)** **Hydrogen Sulfide (H_2S)** **Cyanide Gases (CN^-)**
Particulate Monitor	**NA**	**Aerosols, mist, dust, and fumes**
Colorimetric Detector Tubes	**Sensidyne, Draeger**	**Benzene 0.5–10 ppm**

16.0 DECONTAMINATION PROCEDURES

Decontamination Procedures:

Contamination may result from walking through contaminated soils or liquids, splashing liquids during sampling, or use of or contact with contaminated equipment.

Decontamination procedures for the following tasks will be observed onsite:

- **Sampling**: The submersible bladder pump is to be scrubbed with an Alconox wash and rinsed with water prior to sampling, and between each well.

- **PPE**: All contaminated, disposable clothing will be properly bagged for disposal and left onsite for proper disposal. The PPE may be added to the soil drums for disposal.

17.0 WASTE STORAGE/DISPOSAL

No contaminated waste will be generated during this investigation.

17.1 Spill Containment Program

No anticipated spills or releases of hazardous chemicals are associated with this project. Any spills will be contained and drummed for proper disposal.

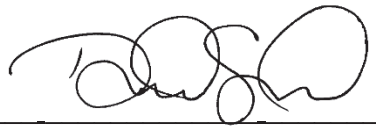
18.0 DOCUMENTS EXPECTED TO BE COMPLETED

The Site Safety Officer will maintain a master Site Health and Safety Plan which will be updated with the Daily Log (Section 11.0) and daily sign in sheets. In the event that site conditions warrant updating this Site Health and Safety Plan, updated sections will be appended to this plan. The master Site Health and Safety Plan will be archived in the project file at the offices of BCA for ten years following the end of the project.

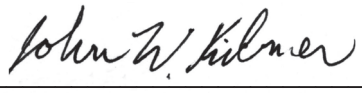
Other documents which will be maintained include field books, boring logs, groundwater sampling sheets, contractor provided SDSs, and correspondence.

19.0 APPROVALS

I, the undersigned, attest that I am familiar with the contents of this Health and Safety Plan and do agree to administrate the procedures described herein.

Plan Prepared by:  Date: 2/26/2021

Plan Approved by:  Date: 2/26/2021

Health and Safety Officer:  Date: 2/26/2021

20.0 EMPLOYEE ACKNOWLEDGMENT

The designated BCA employee shall be responsible for informing all individuals entering the exclusion zone of the contents of this plan, and ensuring each person signs the employee acknowledgment form. By signing this form, individuals are recognizing the hazards present on site and the policies and procedures required to minimize exposure or adverse affects of these hazards.

I have read the site health and safety plan and have been briefed and fully understand all of the following aspects of the project:

Hazards associated with the project:

1. Personal protective equipment;
2. Emergency procedures/contacts;
3. Project team-member responsibilities; and,
4. Work zones and decontamination procedures.

I have undergone medical monitoring and have been respirator fit-tested in the last year.

Form must be signed each day on site.

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

Signature:_____ Date:_____

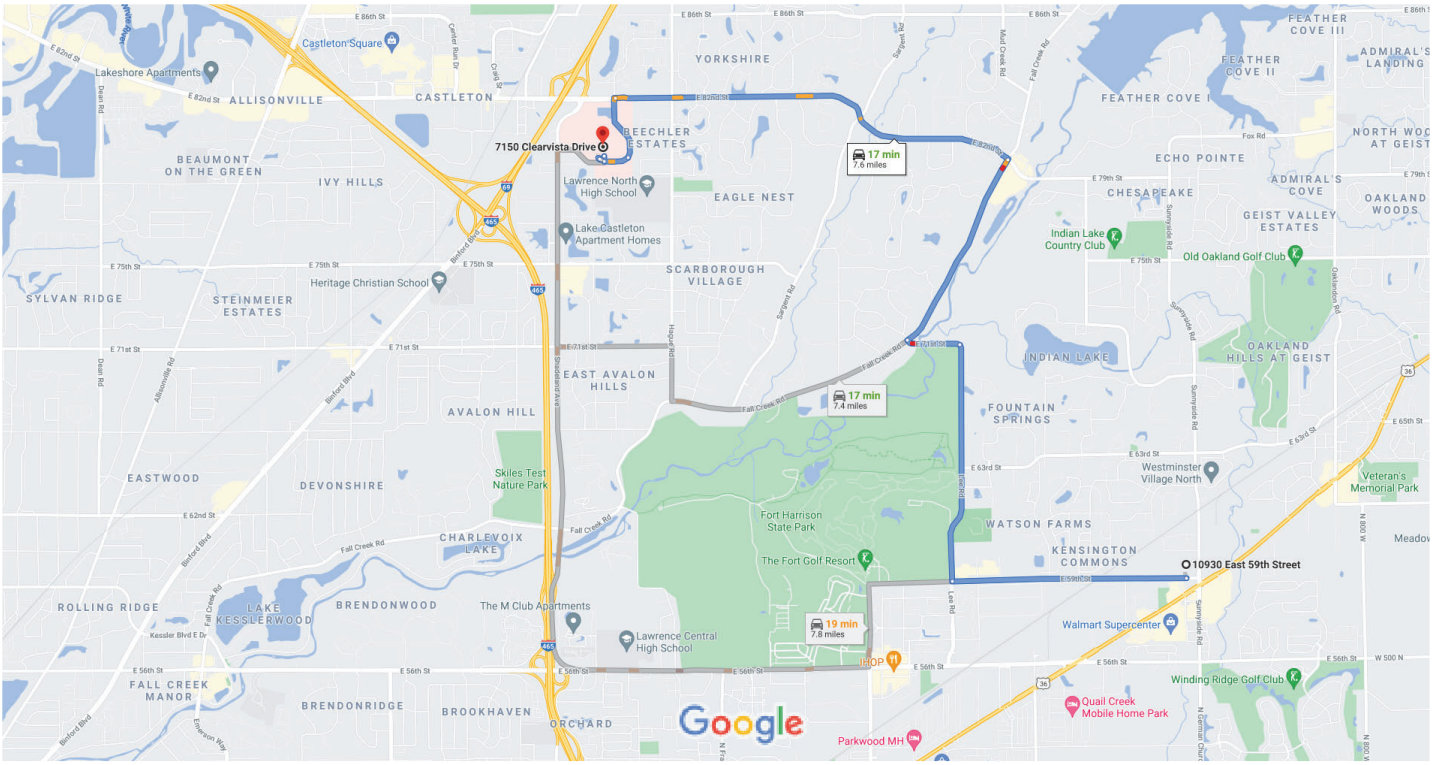
Signature:_____ Date:_____

Signature:_____ Date:_____

Google Maps

10930 E 59th St, Indianapolis, IN 46236 to 7150 Clearvista Drive, Indianapolis, IN

Drive 7.6 miles, 17 min



Map data ©2021 2000 ft

10930 E 59th St

Indianapolis, IN 46236

Take E 59th St, Lee Rd and E 82nd St to Clearvista Pkwy in Indianapolis

12 min (7.0 mi)

1. Head west on E 59th St toward Thunderbird Rd

1.4 mi

2. Turn right onto Lee Rd

1.5 mi

3. Lee Rd turns slightly left and becomes E 71st St

0.3 mi

4. Turn right onto Fall Creek Rd

1.3 mi

5. Turn left onto E 82nd St

2.5 mi

Continue on Clearvista Pkwy to your destination

4 min (0.6 mi)

6. Turn left onto Clearvista Pkwy

0.4 mi

7. Clearvista Pkwy turns slightly right and becomes Clearvista Dr

0.1 mi

8. Turn right

177 ft

9. Turn left

151 ft

10. Turn right

52 ft

11. Turn right

75 ft

7150 Clearvista Dr

Indianapolis, IN 46256

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Appendix B

Indoor Air Building Survey Checklist

Indoor Air and Sub-Slab Vapor Intrusion Assessment
Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236

TECHNICAL GUIDANCE DOCUMENT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Vapor Intrusion Investigation Documentation

Office of Land Quality

(317) 232-3215 • (800) 451-6027 www.idem.IN.gov 100 N. Senate Ave., Indianapolis, IN 46204

Guidance Created: August 8, 2016
Guidance Revised: September 2020

This document provides an example template for documenting site and structure-specific information relevant to potential vapor intrusion investigations. It serves as a record of the sampling event for each structure and details site-specific information that may be used in determining or recommending a remedy. The template uses a staged approach that seeks only that information relevant to each stage of a typical vapor intrusion investigation.

Part I gathers general site information. Part II documents structure-specific information, including sampling locations. Part III addresses potential background sources.

Vapor Intrusion Investigation Documentation

Part I: General Information

Complete Part I for each sampling event (may involve multiple structures)

Release	*For Known Source(s):*		
	Site Name (if applicable) Former Precision Machine		Site Number
	Address of Investigation:		
	~~10930 E. 59th St. Lawrence, IN 46236~~		
	5968 Sunnyside Rd. Lawrence, IN 46236		
	☐ Source not known		
Chemicals	*Check all that apply:*		
	☒ Chlorinated solvents ☐ Petroleum hydrocarbons ☐ Unknown		
	☐ Other *(specify)*:		
Rationale	Condition(s) prompting investigation *(check all that apply):*		
	☐ Odor complaint		
	☒ Ground water contamination levels		
	☒ Soil contamination levels		
	☒ Other *(specify)*: Regulation		
Weather	Precipitation ≤ 12 hours prior to sampling? ☒ Yes ☐ No 0.1"		
	Outside temperature range: 68 °F to 80 °F		
Personnel	Sampler(s)	Affiliation	Telephone
	Rod Manny	BCA	(317)578-4233
	David Scovel	BCA	
	Preparer	Affiliation	Telephone
	Rod Manny		
	Laboratory: Pace Analytical Minneapolis, MN		

Vapor Intrusion Investigation Documentation

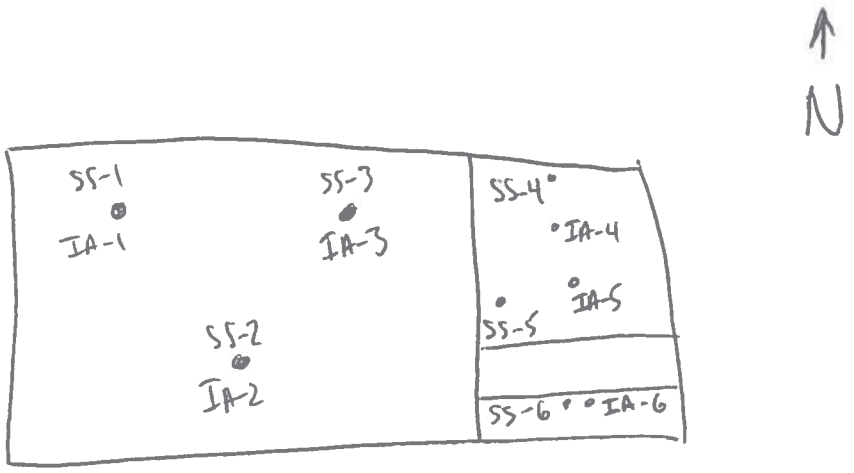
Part II: General Structure Characteristics and Sampling Information

Complete a separate Part II for each structure

	☐ Residential ☒ Non-residential ☐ Multi-unit	Year Constructed: 2019
	Floors at/above grade: ONE	Ceiling Height (feet): ~ 35'
	Sensitive population? ☒ No ☐ Yes (*specify*):	
	Surrounding area: ☐ Bare soil/Vegetation ☐ Impervious ☒ Mixed	
	☐ Basement ☐ Crawl space ☒ Slab on grade (check all that are applicable)	
Basement (if applicable) N/A	Depth of basement floor below ground surface (feet):	
	Basement area: _____ ft^2	
	Floor is ☐ Dirt/stones ☐ Slab ☐ Other (*specify*):	
	Walls are ☐ Block ☐ Poured ☐ Other (*specify*):	
	Floor sealed? ☐ Yes ☐ No	Walls sealed? ☐ Yes ☐ No
	Sump? ☐ Yes ☐ No	Water in sump? ☐ Yes ☐ No
	Floor cracks? ☐ Yes ☐ No	Wall cracks? ☐ Yes ☐ No
Heating	System type (*check all that apply*): ☒ Hot air circulation ☒ Hot air radiation ☐ Steam radiation ☐ Wood ☐ Heat pump ☐ Hot water radiation ☐ Kerosene ☐ Electric baseboard ☐ Other (*specify*): Is system operating? ☐ Yes ☒ No System Comments:	
	Fuel type (*check all that apply*): ☒ Natural gas ☒ Electric ☐ Oil ☐ Wood ☐ Coal ☐ Kerosene ☐ Other (*specify*):	
Other	Whole house fan? ☒ Yes ☐ No	Septic? ☐ Yes ☒ No
	Well? ☐ Yes ☒ No	
	Sub-slab vapor/moisture barrier? ☐ Yes ☐ No ☒ Don't Know If yes, what kind: Instructions for Occupants followed? ☒ Yes ☐ No If not, describe modifications:	

Part II: Structure Characteristics and Sampling Information *continued*

Sample Location Sketch



ID	Type[1]	Floor	Room	Vol (mL)	Time (hrs)	Method[2]
IA-1	IA	Ground	Production Floor	6L	24	TO-15
IA-2						
IA-3						
IA-4			Office			
IA-5						
IA-6			Production Space			
SS-1	SS	Slab	Production Floor	1L	~~10 min~~ 5 min.	
SS-2	SS			1L	5 min.	

[1] IA = indoor air SS = sub-slab SGe = exterior soil gas CS = crawl space NS = near-slab exterior
[2] TO-14A; TO-15; TO-15SIM; TO-17; Other (specify)

Vapor Intrusion Investigation Documentation

Part III: Indoor Air Background Investigation

Complete a separate Part III for any structure with suspected background source

Structure address: 5968 Sunnyside Rd. 46236
Potential background contaminant(s):

☒ Yes	☐ No	Do structure occupants smoke?
		If yes, last time someone smoked in structure: Never
☐ Yes	☒ No	Garage attached to living space?
		If yes, is a vehicle usually parked in the garage?
		If yes, are gas cans or gas-powered equipment stored in the garage?
☐ Yes	☒ No	Do structure occupants have clothes dry cleaned?
		If yes, how often:
		If yes, last time newly dry cleaned clothes brought home:
☐ Yes	☒ No	Occupants use solvents at place of employment?
		If yes, what types:
		If yes, are their clothes washed away from home?
☐ Yes	☒ No	Are pesticides applied in/around structure?
		If yes, which pesticides:
		If yes, when:
☐ Yes	☒ No	Has there ever been a fire in the structure?
		If yes, when:
☐ Yes	☒ No	Painting or staining in the building in the last six months?
		If yes, when:
		If yes, which rooms:

Vapor Intrusion Investigation Documentation
Part III: Indoor Air Background Investigation *continued*
Indoor Chemical Inventory

Potential Sources	Location(s)	Removed prior to sampling? Y/N/NA
Gasoline storage cans		
Gas powered equipment		
Kerosene storage cans	SW	
Paint/thinner/stripper	~~NW~~ Corner of Building, Locked Cabnet	N
Cleaning solvents		
Oven cleaner		
Carpet/upholstery cleaner		
Other cleaning products		
Moth balls		
Polish/wax		
Insecticide		
Nail polish/polish remover		
Hairspray		
Cologne/perfume		
Air fresheners		
Indoor fuel tank		
Wood stove or fireplace		
New furniture/upholstery		
New carpeting/flooring		
Hobby chemicals: glues, paints, lacquers, darkroom chemicals, etc.	NE corner of production floor near IA-3, SS-3	N
Scented trees, wreaths, potpourri, etc.		
Other Weld on 3	~~NW~~ corner of building SW	N

Lawrence Weather Data

Weather History for KININDIA84 - August 1 - 31 2021 Daily Weather History & Observations

2021	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)		Wind (mph)			Precipitation	
August	high	avg	low	high	avg	low	high	avg	low	high	low	high	avg	low	Inches	Events
8/1/2021	80.2 °F	68.5 °F	58.5 °F	69.0 °F	60.0 °F	54.0 °F	94 %	76 %	50 %	30.08 in	29.94 in	6.0 mph	0.4 mph	0.0 mph	0.00 in	Dry
8/2/2021	77.5 °F	66.5 °F	55.5 °F	62.0 °F	57.4 °F	53.0 °F	93 %	75 %	51 %	30.17 in	30.08 in	5.0 mph	0.3 mph	0.0 mph	0.00 in	Dry
8/3/2021	80.3 °F	68.2 °F	56.0 °F	61.0 °F	56.6 °F	54.0 °F	93 %	70 %	41 %	30.13 in	30.05 in	7.0 mph	0.6 mph	0.0 mph	0.00 in	Dry
8/4/2021	81.7 °F	68.9 °F	55.8 °F	63.0 °F	56.9 °F	53.0 °F	94 %	69 %	38 %	30.14 in	30.08 in	6.0 mph	0.3 mph	0.0 mph	0.00 in	Dry
8/5/2021	85.2 °F	70.7 °F	57.5 °F	66.0 °F	60.3 °F	55.0 °F	94 %	73 %	41 %	30.16 in	30.05 in	4.0 mph	0.2 mph	0.0 mph	0.00 in	Dry
8/6/2021	83.9 °F	72.9 °F	61.0 °F	68.0 °F	63.8 °F	59.0 °F	94 %	75 %	52 %	30.12 in	30.01 in	3.0 mph	0.1 mph	0.0 mph	0.00 in	Dry
8/7/2021	87.4 °F	77.0 °F	67.0 °F	73.0 °F	68.5 °F	64.0 °F	90 %	76 %	58 %	30.05 in	29.96 in	4.0 mph	0.1 mph	0.0 mph	0.00 in	Dry
8/8/2021	86.9 °F	77.1 °F	66.8 °F	73.0 °F	69.5 °F	65.0 °F	93 %	78 %	60 %	30.02 in	29.94 in	4.0 mph	0.2 mph	0.0 mph	0.00 in	Dry
8/9/2021	79.2 °F	73.8 °F	70.7 °F	72.0 °F	69.9 °F	68.0 °F	92 %	87 %	77 %	30.02 in	29.92 in	5.0 mph	0.3 mph	0.0 mph	0.02 in	Rain
8/10/2021	89.2 °F	80.3 °F	72.1 °F	80.0 °F	75.0 °F	70.0 °F	94 %	84 %	69 %	30.01 in	29.92 in	2.0 mph	0.1 mph	0.0 mph	0.00 in	Dry
8/11/2021	89.5 °F	81.5 °F	73.7 °F	78.0 °F	74.4 °F	71.0 °F	92 %	79 %	67 %	29.99 in	29.86 in	3.0 mph	0.2 mph	0.0 mph	0.00 in	Dry
8/12/2021	90.8 °F	82.0 °F	73.0 °F	78.0 °F	73.7 °F	68.0 °F	88 %	76 %	61 %	30.03 in	29.91 in	4.0 mph	0.3 mph	0.0 mph	0.00 in	Dry
8/13/2021	83.6 °F	76.1 °F	69.5 °F	73.0 °F	70.4 °F	67.0 °F	94 %	83 %	69 %	30.11 in	30.01 in	5.0 mph	0.1 mph	0.0 mph	0.01 in	Rain
8/14/2021	82.4 °F	73.9 °F	65.8 °F	69.0 °F	62.4 °F	59.0 °F	91 %	69 %	49 %	30.24 in	30.11 in	10.0 mph	0.7 mph	0.0 mph	0.00 in	Dry
8/15/2021	79.6 °F	70.2 °F	59.8 °F	65.0 °F	60.1 °F	56.0 °F	88 %	71 %	56 %	30.22 in	30.09 in	7.0 mph	0.7 mph	0.0 mph	0.00 in	Dry
8/16/2021	80.7 °F	73.1 °F	65.8 °F	71.0 °F	65.6 °F	59.0 °F	88 %	77 %	69 %	30.11 in	29.99 in	7.0 mph	0.5 mph	0.0 mph	0.00 in	Dry
8/17/2021	84.8 °F	74.9 °F	66.7 °F	73.0 °F	69.6 °F	65.0 °F	94 %	84 %	67 %	30.06 in	29.95 in	5.0 mph	0.2 mph	0.0 mph	0.00 in	Dry
8/18/2021	86.5 °F	75.6 °F	67.6 °F	76.0 °F	70.4 °F	66.0 °F	94 %	84 %	62 %	30.10 in	30.00 in	1.0 mph	0.0 mph	0.0 mph	0.00 in	Dry
8/21/2021	80.6 °F	76.6 °F	73.3 °F	72.0 °F	70.6 °F	70.0 °F	88 %	82 %	74 %	29.89 in	29.84 in	0.0 mph	0.0 mph	0.0 mph	0.00 in	Dry
8/22/2021	90.7 °F	78.6 °F	66.8 °F	74.0 °F	69.6 °F	65.0 °F	95 %	76 %	49 %	29.98 in	29.89 in	5.0 mph	0.2 mph	0.0 mph	0.00 in	Dry
8/23/2021	91.0 °F	79.6 °F	70.1 °F	77.0 °F	71.1 °F	67.0 °F	94 %	77 %	51 %	30.00 in	29.92 in	2.0 mph	0.2 mph	0.0 mph	0.00 in	Dry
8/24/2021	94.1 °F	81.4 °F	70.1 °F	77.0 °F	72.5 °F	67.0 °F	92 %	76 %	54 %	30.03 in	29.95 in	6.0 mph	0.1 mph	0.0 mph	0.00 in	Dry
8/25/2021	79.2 °F	74.6 °F	68.8 °F	74.0 °F	71.3 °F	67.0 °F	94 %	89 %	82 %	30.17 in	29.99 in	4.0 mph	0.1 mph	0.0 mph	0.58 in	Rain
8/26/2021	90.6 °F	75.8 °F	69.0 °F	77.0 °F	71.1 °F	67.0 °F	95 %	86 %	57 %	30.16 in	30.07 in	5.0 mph	0.2 mph	0.0 mph	0.78 in	Rain
8/27/2021	90.8 °F	76.1 °F	67.2 °F	78.0 °F	71.3 °F	66.0 °F	95 %	86 %	61 %	30.11 in	30.02 in	4.0 mph	0.1 mph	0.0 mph	0.15 in	Rain
8/28/2021	86.9 °F	76.4 °F	70.3 °F	78.0 °F	72.5 °F	69.0 °F	95 %	88 %	69 %	30.17 in	30.09 in	1.0 mph	0.0 mph	0.0 mph	0.55 in	Rain
8/29/2021	87.4 °F	78.3 °F	71.1 °F	77.0 °F	72.9 °F	69.0 °F	94 %	84 %	67 %	30.12 in	29.97 in	1.0 mph	0.0 mph	0.0 mph	0.03 in	Rain
8/30/2021	79.7 °F	74.4 °F	69.8 °F	75.0 °F	71.5 °F	67.0 °F	95 %	90 %	82 %	30.02 in	29.84 in	5.0 mph	0.1 mph	0.0 mph	0.26 in	Rain
8/31/2021	81.7 °F	72.9 °F	68.3 °F	73.0 °F	68.8 °F	66.0 °F	95 %	87 %	73 %	29.90 in	29.71 in	5.0 mph	0.4 mph	0.0 mph	0.04 in	Rain

Sation Name	Radio Station N1HQH - KININDIA84
Station ID	KININDIA84
Sation Location	39.874 -85.966
Station Elevation	843 ft
Station Type	Davis Vantage Pro2 (Cabled)
Software:	weatherlink.com 1.10
Station Web Site:	https://www.wunderground.com/dashboard/pws/KININDIA84/table/2021-08-20/2021-08-20/monthly

IA Sample Event = August 30 - 31, 2021

Appendix C

Air Sampling Log

Indoor Air and Sub-Slab Vapor Intrusion Assessment
Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236

Indoor Air Sample Logs

Sample ID	IA Sample Location	SGe/SGss Sample Point Install Date	SGss Point Purge Date	Purge Time (minutes)	PID Reading	Sample Train Leak Test Vacuum			Summa Can Size	Start Date	End Date	Start Time	End Time	Summa Can Pressure		Summa Can Number	Control Valve Number	Flow Control
						Start	End	Duration						Start	End			
IA-1	Production Floor - NW								6L	8/30/2021	8/31/2021	10:40	9:04	-30	0	0953	2103	24 hour
IA-1 DUP	Production Floor - NW								6L	8/30/2021	8/31/2021	10:40	9:04	-29	-6	2158	2107	24 hour
IA-2	Production Floor - South Central								6L	8/30/2021	8/31/2021	10:42	9:09	-28	-3	2051	2158	24 hour
IA-3	Production Floor - NE								6L	8/30/2021	8/31/2021	10:39	9:02	-30	0	2034	2052	24 hour
IA-4	Office - East								6L	8/30/2021	8/31/2021	10:33	10:05	-29	-17	3344	2139	24 hour
IA-5	Kitchen								6L	8/30/2021	8/31/2021	10:35	9:11	-30	-5	3361	1992	24 hour
IA-6	Production Space								6L	8/30/2021	8/31/2021	10:36	10:07	-30	-10	2387	2167	24 hour
SS-1	Production Floor - NW		8/30/2021	3	0	-15	-15	90 Sec	1L	8/30/2021	8/30/2021	11:49	11:54	-27	-6	2260	1235	5 min
SS-2	Production Floor - South Central		8/30/2021	3	0	-15	-15	90 Sec	1L	8/30/2021	8/30/2021	11:37	11:42	-26	-5	3730	2770	5 min
SS-3	Production Floor - NE	8/30/2021	8/30/2021	3	0	-15	-15	90 Sec	1L	8/30/2021	8/30/2021	12:12	12:17	-29	0	3706	2952	5 min
SS-4	Server Room - NE		8/30/2021	3	0.3	-15	-15	90 Sec	1L	8/30/2021	8/30/2021	10:55	11:00	-29	-5	3757	2749	5 min
SS-5	Men's Bathroom - Production Floor		8/30/2021	3	0.2	-15	-15	90 Sec	1L	8/30/2021	8/30/2021	11:22	11:27	-27	-6	2246	2873	5 min
SS-6	Production Space		8/30/2021	3	0.2	-15	-15	90 Sec	1L	8/30/2021	8/30/2021	11:08	11:14	-29	-5	2505	2785	5 min
Upwind	Fence-gate pole near NE corner of the Site								6L	8/30/2021	8/31/2021	10:11	9:24	-30	-5	2369	2079	24 hour
Downwind	Utility at SE corner of the Site								6L	8/30/2021	8/31/2021	10:09	9:28	-30	-6	0818	2083	24 hour
TB	Nitrogen filled - stayed with DUP								1L	---	---	---	---	---	---	3809	---	---

EPA Method TO-15 Low Level

Appendix D

Analytical Laboratory Reports

Indoor Air and Sub-Slab Vapor Intrusion Assessment
Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

September 10, 2021

David Scovel
BCA Consultants
7202 E. 87th Street
#110
Indianapolis, IN 46250

RE: Project: 21-253 Lawrence
Pace Project No.: 10577519

Dear David Scovel:

Enclosed are the analytical results for sample(s) received by the laboratory on September 03, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Carolynne Trout

Carolynne Trout
carolynne.trout@pacelabs.com
1(612)607-6351
Project Manager

Enclosures

cc: Cam Schipp, BCA Environmental Consultants

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

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SAMPLE SUMMARY

Project: 21-253 Lawrence
Pace Project No.: 10577519

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10577519001	**SS-1**	Air	08/30/21 11:54	09/03/21 14:00
10577519002	**SS-2**	Air	08/30/21 11:42	09/03/21 14:00
10577519003	**SS-3**	Air	08/30/21 12:17	09/03/21 14:00
10577519004	**SS-4**	Air	08/30/21 11:00	09/03/21 14:00
10577519005	**SS-5**	Air	08/30/21 11:27	09/03/21 14:00
10577519006	**SS-6**	Air	08/30/21 11:14	09/03/21 14:00
10577519007	**IA-1 DUP**	Air	08/31/21 09:04	09/03/21 14:00
10577519008	**IA-1**	Air	08/31/21 09:04	09/03/21 14:00
10577519009	**IA-2**	Air	08/31/21 09:09	09/03/21 14:00
10577519010	**IA-3**	Air	08/31/21 09:02	09/03/21 14:00
10577519011	**IA-4**	Air	08/31/21 10:05	09/03/21 14:00
10577519012	**IA-5**	Air	08/31/21 09:11	09/03/21 14:00
10577519013	**IA-6**	Air	08/31/21 10:07	09/03/21 14:00
10577519014	**UPWIND**	Air	08/31/21 09:24	09/03/21 14:00
10577519015	**DOWNWIND**	Air	08/31/21 09:28	09/03/21 14:00
10577519016	**Trip Blank**	Air	08/31/21 00:00	09/03/21 14:00

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SAMPLE ANALYTE COUNT

Project: 21-253 Lawrence
Pace Project No.: 10577519

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10577519001	**SS-1**	TO-15	HMH	3
10577519002	**SS-2**	TO-15	HMH	3
10577519003	**SS-3**	TO-15	HMH	3
10577519004	**SS-4**	TO-15	HMH	3
10577519005	**SS-5**	TO-15	HMH	3
10577519006	**SS-6**	TO-15	HMH	3
10577519007	**IA-1 DUP**	TO-15	HMH	3
10577519008	**IA-1**	TO-15	HMH	3
10577519009	**IA-2**	TO-15	GT	3
10577519010	**IA-3**	TO-15	GT	3
10577519011	**IA-4**	TO-15	GT	3
10577519012	**IA-5**	TO-15	GT	3
10577519013	**IA-6**	TO-15	GT	3
10577519014	**UPWIND**	TO-15	GT	3
10577519015	**DOWNWIND**	TO-15	GT	3
10577519016	**Trip Blank**	TO-15	GT	3

PASI-M = Pace Analytical Services - Minneapolis

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: SS-1 **Lab ID: 10577519001** Collected: 08/30/21 11:54 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.4	2.1		09/08/21 21:04	127-18-4	
Trichloroethene	ND	ug/m3	1.1	2.1		09/08/21 21:04	79-01-6	
Vinyl chloride	ND	ug/m3	0.55	2.1		09/08/21 21:04	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: SS-2 **Lab ID: 10577519002** Collected: 08/30/21 11:42 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.4	2.1		09/08/21 21:33	127-18-4	
Trichloroethene	**3.1**	ug/m3	1.1	2.1		09/08/21 21:33	79-01-6	
Vinyl chloride	ND	ug/m3	0.55	2.1		09/08/21 21:33	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: SS-3 **Lab ID: 10577519003** Collected: 08/30/21 12:17 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.2	1.74		09/08/21 22:04	127-18-4	
Trichloroethene	ND	ug/m3	0.95	1.74		09/08/21 22:04	79-01-6	
Vinyl chloride	ND	ug/m3	0.45	1.74		09/08/21 22:04	75-01-4	

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: SS-4 **Lab ID: 10577519004** Collected: 08/30/21 11:00 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.3	1.94		09/08/21 23:34	127-18-4	
Trichloroethene	ND	ug/m3	1.1	1.94		09/08/21 23:34	79-01-6	
Vinyl chloride	ND	ug/m3	0.50	1.94		09/08/21 23:34	75-01-4	

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: SS-5 **Lab ID: 10577519005** Collected: 08/30/21 11:27 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.4	2.1		09/09/21 00:03	127-18-4	
Trichloroethene	**2.5**	ug/m3	1.1	2.1		09/09/21 00:03	79-01-6	
Vinyl chloride	ND	ug/m3	0.55	2.1		09/09/21 00:03	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: SS-6 **Lab ID: 10577519006** Collected: 08/30/21 11:14 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.4	2.1		09/09/21 00:32	127-18-4	
Trichloroethene	**18.3**	ug/m3	1.1	2.1		09/09/21 00:32	79-01-6	
Vinyl chloride	ND	ug/m3	0.55	2.1		09/09/21 00:32	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: IA-1 DUP **Lab ID: 10577519007** Collected: 08/31/21 09:04 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.1	1.61		09/08/21 18:09	127-18-4	
Trichloroethene	ND	ug/m3	0.88	1.61		09/08/21 18:09	79-01-6	
Vinyl chloride	ND	ug/m3	0.42	1.61		09/08/21 18:09	75-01-4	

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: IA-1 **Lab ID: 10577519008** Collected: 08/31/21 09:04 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	0.96	1.39		09/08/21 18:39	127-18-4	
Trichloroethene	ND	ug/m3	0.76	1.39		09/08/21 18:39	79-01-6	
Vinyl chloride	ND	ug/m3	0.36	1.39		09/08/21 18:39	75-01-4	

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: IA-2 **Lab ID: 10577519009** Collected: 08/31/21 09:09 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
	Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.1	1.61		09/08/21 17:25	127-18-4	
Trichloroethene	ND	ug/m3	0.88	1.61		09/08/21 17:25	79-01-6	
Vinyl chloride	ND	ug/m3	0.42	1.61		09/08/21 17:25	75-01-4	

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: IA-3 **Lab ID: 10577519010** Collected: 08/31/21 09:02 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	0.92	1.34		09/08/21 18:19	127-18-4	
Trichloroethene	ND	ug/m3	0.73	1.34		09/08/21 18:19	79-01-6	
Vinyl chloride	ND	ug/m3	0.35	1.34		09/08/21 18:19	75-01-4	

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: IA-4 **Lab ID: 10577519011** Collected: 08/31/21 10:05 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	2.0	2.88		09/08/21 18:46	127-18-4	
Trichloroethene	**4.6**	ug/m3	1.6	2.88		09/08/21 18:46	79-01-6	
Vinyl chloride	ND	ug/m3	0.75	2.88		09/08/21 18:46	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: IA-5 **Lab ID: 10577519012** Collected: 08/31/21 09:11 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.1	1.58		09/08/21 19:13	127-18-4	
Trichloroethene	**7.6**	ug/m3	0.86	1.58		09/08/21 19:13	79-01-6	
Vinyl chloride	ND	ug/m3	0.41	1.58		09/08/21 19:13	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: IA-6 **Lab ID: 10577519013** Collected: 08/31/21 10:07 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.3	1.83		09/08/21 19:40	127-18-4	
Trichloroethene	**16.9**	ug/m3	1.0	1.83		09/08/21 19:40	79-01-6	
Vinyl chloride	ND	ug/m3	0.48	1.83		09/08/21 19:40	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: UPWIND **Lab ID: 10577519014** Collected: 08/31/21 09:24 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.1	1.55		09/08/21 20:07	127-18-4	
Trichloroethene	ND	ug/m3	0.85	1.55		09/08/21 20:07	79-01-6	
Vinyl chloride	ND	ug/m3	0.40	1.55		09/08/21 20:07	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: DOWNWIND **Lab ID: 10577519015** Collected: 08/31/21 09:28 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	1.1	1.55		09/08/21 20:34	127-18-4	
Trichloroethene	ND	ug/m3	0.85	1.55		09/08/21 20:34	79-01-6	
Vinyl chloride	ND	ug/m3	0.40	1.55		09/08/21 20:34	75-01-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 21-253 Lawrence
Pace Project No.: 10577519

Sample: Trip Blank **Lab ID: 10577519016** Collected: 08/31/21 00:00 Received: 09/03/21 14:00 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15 Pace Analytical Services - Minneapolis							
Tetrachloroethene	ND	ug/m3	0.69	1		09/08/21 16:31	127-18-4	
Trichloroethene	**3.5**	ug/m3	0.55	1		09/08/21 16:31	79-01-6	
Vinyl chloride	ND	ug/m3	0.26	1		09/08/21 16:31	75-01-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 21-253 Lawrence
Pace Project No.: 10577519

QC Batch: 768868
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10577519001, 10577519002, 10577519003, 10577519004, 10577519005, 10577519006, 10577519007, 10577519008

METHOD BLANK: 4096963 Matrix: Air
Associated Lab Samples: 10577519001, 10577519002, 10577519003, 10577519004, 10577519005, 10577519006, 10577519007, 10577519008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tetrachloroethene	ug/m3	ND	0.34	09/08/21 11:21	
Trichloroethene	ug/m3	ND	0.27	09/08/21 11:21	
Vinyl chloride	ug/m3	ND	0.13	09/08/21 11:21	

LABORATORY CONTROL SAMPLE: 4096964

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/m3	73.4	80.1	109	70-130	
Trichloroethene	ug/m3	58.4	65.1	111	70-130	
Vinyl chloride	ug/m3	28	31.6	113	70-137	

SAMPLE DUPLICATE: 4098166

Parameter	Units	10577378001 Result	Dup Result	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

SAMPLE DUPLICATE: 4098167

Parameter	Units	10577378002 Result	Dup Result	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 21-253 Lawrence
Pace Project No.: 10577519

QC Batch: 768869
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10577519009, 10577519010, 10577519011, 10577519012, 10577519013, 10577519014, 10577519015, 10577519016

METHOD BLANK: 4096970 Matrix: Air
Associated Lab Samples: 10577519009, 10577519010, 10577519011, 10577519012, 10577519013, 10577519014, 10577519015, 10577519016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tetrachloroethene	ug/m3	ND	0.34	09/08/21 09:05	
Trichloroethene	ug/m3	ND	0.27	09/08/21 09:05	
Vinyl chloride	ug/m3	ND	0.13	09/08/21 09:05	

LABORATORY CONTROL SAMPLE: 4096971

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/m3	73.4	70.8	96	70-130	
Trichloroethene	ug/m3	58.4	56.4	96	70-130	
Vinyl chloride	ug/m3	28	27.7	99	70-137	

SAMPLE DUPLICATE: 4098707

Parameter	Units	10577519009 Result	Dup Result	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

SAMPLE DUPLICATE: 4098708

Parameter	Units	10577519016 Result	Dup Result	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	3.5	3.6	3	25	
Vinyl chloride	ug/m3	ND	ND		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 21-253 Lawrence
Pace Project No.: 10577519

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 21-253 Lawrence
Pace Project No.: 10577519

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10577519001	**SS-1**	TO-15	768868		
10577519002	**SS-2**	TO-15	768868		
10577519003	**SS-3**	TO-15	768868		
10577519004	**SS-4**	TO-15	768868		
10577519005	**SS-5**	TO-15	768868		
10577519006	**SS-6**	TO-15	768868		
10577519007	**IA-1 DUP**	TO-15	768868		
10577519008	**IA-1**	TO-15	768868		
10577519009	**IA-2**	TO-15	768869		
10577519010	**IA-3**	TO-15	768869		
10577519011	**IA-4**	TO-15	768869		
10577519012	**IA-5**	TO-15	768869		
10577519013	**IA-6**	TO-15	768869		
10577519014	**UPWIND**	TO-15	768869		
10577519015	**DOWNWIND**	TO-15	768869		
10577519016	**Trip Blank**	TO-15	768869		

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www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / A

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant f

WO# : 10577519

10577519

51486

Page: 1 of 2

Section A Required Client Information:

Company: BCA Environmental
Address: 7702 E 87th St. #110
Indianapolis, IN 46256
Email To: DScovel, RMcnny
Phone: Fax:
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: DScovel
Copy To: RMcnny
Purchase Order No.:
Project Name: Lawrence
Project Number: 21-253

Section C Invoice Information:

Attention: S Jones
Company Name: BCA
Address: SAME
Pace Quote Reference: Lawrence EPA
Pace Project Manager/Sales Rep. R. BEDEL, L. Trout
Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State: IN

Reporting Units: ug/m³ ___ mg/m³ ___ PPBV ___ PPMV ___ Other ___

Report Level: II.___ III.___ IV.X Other___

'Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	AIR SAMPLE ID	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE - END/GRAB DATE	COLLECTED COMPOSITE - END/GRAB TIME	Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C - Fixed Gas (%)	TO-3 BTEX	TO-3M (Methane)	TO-14	TO-15 Full List VOCs	TO-15 Short List BTEX	TO-15 Short List Chlorinated	TO-15 Short List (other)	Pace Lab ID
1	SS-1	1LC	0	8.30.21	1149	8.30.21	1154	-27	-6	2260	1235									X	001
2	SS-2	1LC	0		1137		1142	-26	-5	3730	2770									X	002
3	SS-3	1LC	0		1212		1217	-29	0	3706	2952									X	003
4	SS-4	1LC	0.3		1055		1100	-29	-5	3757	2749									X	004
5	SS-5	1LC	0.2		1122		1127	-27	-6	2246	2873									X	005
6	SS-6	1LC	0.2		1108		1114	-29	-5	2505	2785									X	006
7	IA-1 DUP	6LC	-		1040	8.31.21	0904	-29	-6	2158	2107									X	007
8	IA-1	6LC	-		1040		0904	-30	0	0953	2103									X	008
9	IA-2	6LC	-		1042		0909	-28	-3	2051	2158									X	009
10	IA-3	6LC	-		1039		0902	-30	0	2034	2052									X	010
11	IA-4	6LC	-		1033		1005	-29	-17	3344	2139									X	011
12	IA-5	6LC	-		1035		0911	-30	-5	3361	1992									X	012

Comments: Analyze for: PCE
TCE
VC

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Rod Manny / BCA	8/31	1445	Amy Pace	9/3/21	14:00

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Rodney Manny

SIGNATURE of SAMPLER: Rod Manny DATE Signed (MM / DD / YY): 08/31/21

SAMPLE CONDITIONS

Temp in °C	Received on Ice Y/N	Custody Sealed Cooler Y/N	Samples Intact Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

ORIGINAL

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414 Air Technical Phone: 612.607.6386

Pace Analytical®
www.pacelabs.com

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

51487

Section A Required Client Information:

Company: BIA Environmental
Address: 7202 E 87th St. #110, Indianapolis, IN
Email To: DScovel
Phone: Fax:
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: DScovel
Copy To: RManny
Purchase Order No.:
Project Name: Lawrence
Project Number: 21-253

Section C Invoice Information:

Attention: S. Jones
Company Name:
Address:
Pace Quote Reference: Lawrence EPA
Pace Project Manager/Sales Rep. R. BEDEL, C. TROUT
Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State: IN

Reporting Units: ug/m³ ___ mg/m³ ___ PPBV ___ PPMV ___ Other ___

Report Level: II.___ III.___ IV.X Other___

'Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	'Section D Required Client Information: AIR SAMPLE ID (Sample IDs MUST BE UNIQUE)	MEDIA CODE	PID Reading (Client only)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE - END/GRAB DATE	COMPOSITE - END/GRAB TIME	Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C - Fixed Gas (%)	TO-3 BTEX	TO-3M (Methane)	TO-14	TO-15 Full List VOCs	TO-15 Short List BTEX	TO-15 Short List Chlorinated	TO-15 Short List (other)	Pace Lab ID
1	IA-6	6LC	-	8.30.21	1036	8.31.21	1007	-30	-10	2387	2167									X	013
2	UPWIND	6LC	-	"	1011	"	0924	-30	-5	2369	2079									X	014
3	DOWNWIND	6LC	-	"	1009	"	0928	-30	-6	0818	2083									X	015
4	Trip Blank	1LC	-	—	—	—	—	—	—	3809	—									X	016 017
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Comments: Analyze for: PCE, TCE, VC

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	8/31	1445	[signature] Pace	9/3/21	14:00

SAMPLE CONDITIONS

	Y/N	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N	Y/N
Temp in °C	Y/N	Received on Ice	Custody Sealed Cooler	Samples Intact

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Rodney Manny
SIGNATURE of SAMPLER: [signature] DATE Signed (MM / DD / YY): 08/31/21

ORIGINAL

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414 Air Technical Phone: 612.607.6386

Pace Analytical®	Document Name: Sample Condition Upon Receipt (SCUR) - Air	Document Revised: 24Mar2020 Page 1 of 1
	Document No.: ENV-FRM-MIN4-0113 Rev.0	Pace Analytical Services -

WO# : 10577519
PM: CT1 Due Date: 09/13/21
CLIENT: BCA Consult

Air Sample Condition Upon Receipt Client Name: BCA Project #:

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Pace [ ] SpeeDee [ ] Commercial See Exception

Tracking Number: 9753 8445 1565, 2149, 2138, 2150, 1545

Custody Seal on Cooler/Box Present? [ ] Yes [X] No Seals Intact? [ ] Yes [X] No

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [X] Foam [ ] None [ ] Tin Can [ ] Other:_____ Temp Blank rec: [ ] Yes [ ] No

Temp. (TO17 and TO13 samples only) (°C): — Corrected Temp (°C): —

Thermometer Used: [ ] G87A9170600254 [ ] G87A9155100842

Temp should be above freezing to 6°C Correction Factor: — Date & Initials of Person Examining Contents: RG 9/3/21

Type of ice Received [ ] Blue [ ] Wet [X] None

			Comments:
Chain of Custody Present?	[X] Yes	[ ] No	1.
Chain of Custody Filled Out?	[X] Yes	[ ] No	2.
Chain of Custody Relinquished?	[X] Yes	[ ] No	3.
Sampler Name and/or Signature on COC?	[X] Yes	[ ] No [ ] N/A	4.
Samples Arrived within Hold Time?	[X] Yes	[ ] No	5.
Short Hold Time Analysis (<72 hr)?	[ ] Yes	[X] No	6.
Rush Turn Around Time Requested?	[ ] Yes	[X] No	7.
Sufficient Volume?	[X] Yes	[ ] No	8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-14, TO-15 or APH)** -Pace Containers Used?	[X] Yes [X] Yes	[ ] No [ ] No	9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	[X] Yes	[ ] No	10.
Media: Air Can Airbag Filter TDT Passive			11. Individually Certified Cans Y N (list which samples) Only T. Blank
Is sufficient information available to reconcile samples to the COC?	[X] Yes	[ ] No	12.
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	[X] Yes	[ ] No	13.

Gauge # [ ] 10AIR26 [X] 10AIR34 [ ] 10AIR35 [ ] 4097

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SS - 1	2260	1235	-6	+10	IA - 2	2051	2158	-5	+5
2	3730	2770	-6	"	3	2034	2052	0	"
3	3706	2952	-1	"	4	33141	2139	-16	"
4	3757	2749	-4	"	5	3361	1992	-4.5	"
5	3746	2873	-6	"	6	2387	2167	-8	"
6	2505	2785	-6	"	UP	2369	2079	-4	"
IA Dup	2158	2107	-5	+5	DOWN	818	2083	-4	"
IA - 1	953	2103	-1	"	Trip Blank	3809		+17	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? [ ] Yes [ ] No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Carolyne Trout **Date:** 9/7/21

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Appendix E

Web Soil Survey Map and Unit Descriptions

Indoor Air and Sub-Slab Vapor Intrusion Assessment
Meyer Plastics
5968 Sunnyside Road
Lawrence, IN 46236

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Marion County, Indiana

October 12, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,320 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County, Indiana
Survey Area Data: Version 26, Sep 8, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 1, 2018—Sep 30, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UbaA	Urban land-Brookston complex, 0 to 2 percent slopes	0.8	12.0%
UcfA	Urban land-Crosby silt loam complex, fine-loamy subsoil, 0 to 2 percent slopes	0.3	3.7%
YclA	Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes	4.2	59.7%
YcmB2	Crosby-Urban land-Miami silt loams complex, 2 to 4 percent slopes, eroded	0.7	9.5%
YmsB2	Miami silt loam-Urban land complex, 2 to 6 percent slopes, eroded	1.1	15.2%
Totals for Area of Interest		**7.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor

components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Marion County, Indiana

UbaA—Urban land-Brookston complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2y48h
Elevation: 640 to 930 feet
Mean annual precipitation: 36 to 42 inches
Mean annual air temperature: 49 to 53 degrees F
Frost-free period: 175 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 60 percent
Brookston, drained, and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Till plains

Interpretive groups

Land capability classification (irrigated): None specified
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: Unranked

Description of Brookston, Drained

Setting

Landform: Depressions on till plains
Landform position (two-dimensional): Footslope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess over loamy till

Typical profile

H1 - 0 to 14 inches: silty clay loam
H2 - 14 to 54 inches: clay loam
H3 - 54 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 40 percent
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F111AY007IN - Till Depression Flatwood
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

UcfA—Urban land-Crosby silt loam complex, fine-loamy subsoil, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2y47p
Elevation: 600 to 1,260 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 60 percent
Crosby and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crosby

Setting

Landform: Recessionial moraines, ground moraines, water-lain moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Silty material or loess over loamy till

Typical profile

Ap - 0 to 8 inches: silt loam
BE - 8 to 11 inches: silt loam
Bt - 11 to 14 inches: silt loam
2Bt - 14 to 28 inches: silty clay
2BCt - 28 to 36 inches: loam
2Cd - 36 to 79 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F111AY008IN - Wet Till Ridge
Hydric soil rating: No

Minor Components

Treaty, drained

Percent of map unit: 5 percent
Landform: Swales, water-lain moraines, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F111AY007IN - Till Depression Flatwood
Hydric soil rating: Yes

YclA—Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w57p
Elevation: 600 to 1,040 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Crosby and similar soils: 60 percent
Urban land: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crosby

Setting

Landform: Recessionial moraines, ground moraines, water-lain moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Silty material or loess over loamy till

Typical profile

Ap - 0 to 10 inches: silt loam
Btg - 10 to 17 inches: silty clay loam
2Bt - 17 to 29 inches: clay loam
2BCt - 29 to 36 inches: loam
2Cd - 36 to 79 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 55 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F111AY008IN - Wet Till Ridge
Hydric soil rating: No

Minor Components

Treaty, drained

Percent of map unit: 5 percent
Landform: Swales, water-lain moraines, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F111AY007IN - Till Depression Flatwood
Hydric soil rating: Yes

Williamstown, eroded

Percent of map unit: 5 percent
Landform: Recessionial moraines, ground moraines, water-lain moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Ecological site: F111AY009IN - Till Ridge
Hydric soil rating: No

YcmB2—Crosby-Urban land-Miami silt loams complex, 2 to 4 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2xf6g
Elevation: 600 to 1,040 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Crosby, eroded, and similar soils: 50 percent
Urban land: 30 percent
Miami, eroded, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Crosby, Eroded

Setting

Landform: Recessionial moraines, ground moraines, water-lain moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Silty material or loess over loamy till

Typical profile

Ap - 0 to 10 inches: silt loam
Btg - 10 to 17 inches: silty clay loam
2Bt - 17 to 29 inches: clay loam
2BCt - 29 to 36 inches: loam
2Cd - 36 to 79 inches: loam

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 55 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F111AY008IN - Wet Till Ridge
Hydric soil rating: No

Description of Miami, Eroded

Setting

Landform: Ground moraines, water-lain moraines, recessionial moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Silty material or loess over loamy till

Typical profile

Ap - 0 to 8 inches: silt loam
Bt1 - 8 to 13 inches: silty clay loam
2Bt2 - 13 to 31 inches: clay loam
2BCt - 31 to 36 inches: loam
2Cd - 36 to 79 inches: loam

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 45 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F111AY009IN - Till Ridge
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Treaty, drained

Percent of map unit: 5 percent
Landform: Swales, water-lain moraines, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Linear
Across-slope shape: Concave

Ecological site: F111AY007IN - Till Depression Flatwood
Hydric soil rating: Yes

YmsB2—Miami silt loam-Urban land complex, 2 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2w586
Elevation: 180 to 1,040 feet
Mean annual precipitation: 37 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Miami, eroded, and similar soils: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami, Eroded

Setting

Landform: Till plains
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over loamy till

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 13 inches: silty clay loam
2Bt - 13 to 31 inches: clay loam
2BCt - 31 to 36 inches: loam
2Cd - 36 to 79 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 45 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F111AY009IN - Till Ridge
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Minor Components

Williamstown

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F111AY009IN - Till Ridge
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Treaty

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F111AY007IN - Till Depression Flatwood
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

Crosby

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F111AY008IN - Wet Till Ridge
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

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